

Atty Docket No. 9793822.0155
Express Mail No. EL 716466148 US

Application No. 09/980,323
Reply to 06/25/2003 Office Action

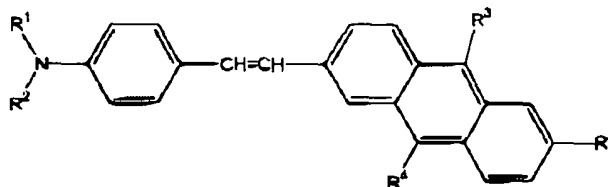
Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

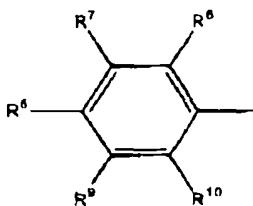
Listing of Claims:

1. (currently amended) An aminostyrylanthracene compound ~~represented by the following general formula [I], [II], [III], or [IV], selected from the group consisting of:~~

General formula [I] having the formula:



~~[where, in the general formula [I] above, wherein R² represents is an unsubstituted aryl group; R³ and R⁴ are identical or different groups wherein at least one of R³ and R⁴ being selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, and a halogen atom; R⁵ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, or an aryl group which may have a substituent; and R¹ represents is an aryl group represented by the following having a general formula (1); General formula (1)~~



~~(wherein in the general formula (1) above, R⁶, R⁷, R⁸, R⁹, and R¹⁰ are identical or different groups, separately selected from the group consisting of each representing a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, a fluoroalkyl group, or and an aryl group which may have a substituent-);~~

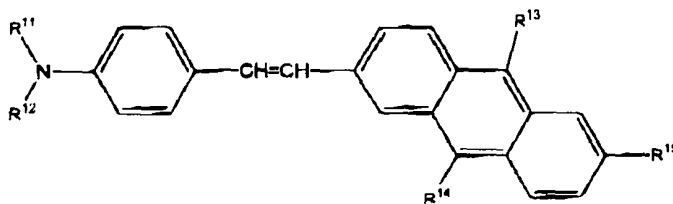
~~R³ and R⁴ are identical or different groups, at least one of them being a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, or a halogen atom, and R⁵ represents a hydrogen~~

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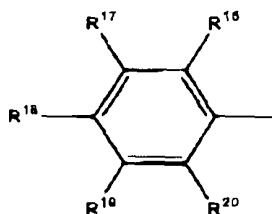
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~~atom, a saturated or unsaturated hydrocarbon group having one or more carbons, or an aryl group which may have a substituent.]~~

General formula [II] having the formula :



~~{wherein, in the general formula [II] above, R¹¹ and R¹² are identical or different groups, each representing an aryl group represented by the following general formula (2), R¹³ and R¹⁴ are identical or different groups wherein at least one of R¹³ and R¹⁴ being selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, and a halogen atom; R¹⁵ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, and an aryl group which may have a substituent; R¹¹ and R¹² are identical or different groups each representing an aryl group represented by the following general formula 2: General formula (2)~~



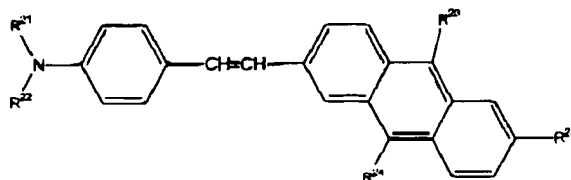
~~(wherein, in the general formula (2) above, R¹⁶, R¹⁷, R¹⁸, R¹⁹, and R²⁰ are identical or different groups; separately selected from the group consisting of each representing a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, a fluoroalkyl group, or and an aryl group which may have a substituent.);~~

~~R¹³ and R¹⁴ are identical or different groups, at least one of them being a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, or a halogen atom, and R¹⁵ represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, or any aryl group which may have a substituent.]~~

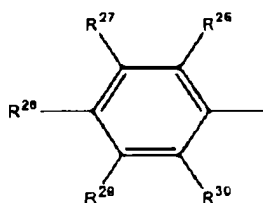
General formula [III] having the formula:

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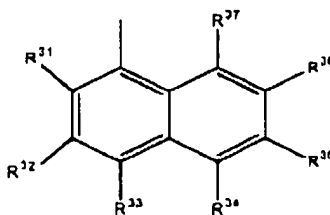
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~~[wherein, in the general formula (III) above, R²¹ represents an aryl group represented by the following general formula (3); R²³ and R²⁴ are identical or different groups wherein at least one of R²³ and R²⁴ is selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, and a halogen atom; R²⁵ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, and an aryl group which may have a substituent; R²¹ is an aryl group represented by the following general formula 3: General formula (3)~~



~~(wherein, in the general formula (3) above, R²⁶, R²⁷, R²⁸, R²⁹, and R³⁰ are identical or different groups, each representing separately selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, ~~or~~ and a fluoroalkyl group); R²² is an aryl group represented by the following general formula (4):~~

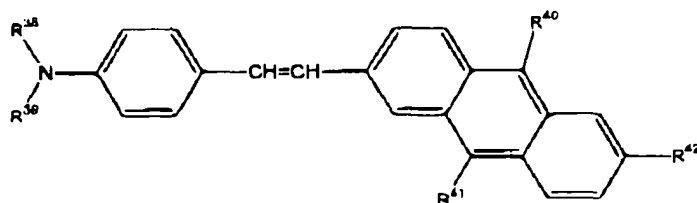


~~(wherein, in the general formula (4) above, R³¹, R³², R³³, R³⁴, R³⁵, R³⁶, and R³⁷ are identical or different groups, each representing separately selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, a fluoroalkyl group, ~~or~~ and an aryl group which may have a substituent); and~~

General formula {IV} having the formula:

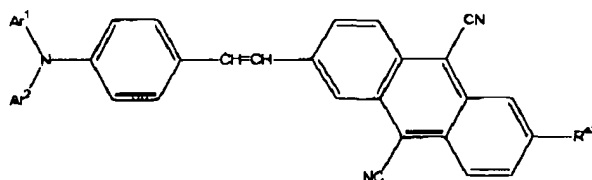
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{wherein, in the general formula (IV) above, R^{38} and R^{39} are identical or different groups; wherein at least one of R^{38} and R^{39} ~~them being~~ is selected from the group consisting of a hydrogen atom, ~~or~~ and a saturated or unsaturated hydrocarbon group having one or more carbons; R^{40} and R^{41} are identical or different groups, ~~each representing~~ separately selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, or and a halogen atom; and R^{42} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, ~~or and~~ an aryl group which may have a substituent.}

2. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 1, ~~which~~ wherein said compound is represented by the following general formula (5) having the formula:



{wherein, in the general formula (5) above, Ar^1 and Ar^2 are identical or different aryl groups which may have a substituent ~~and, if they have a substituent, they represent a group selected from aryl groups represented by the following general formulas (6), (7), (8), (9), (10), and (11);~~ selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10, and general formula 11;

wherein General formula (6) has the formula:



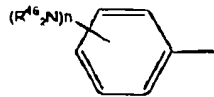
wherein General formula (7) has the formula:

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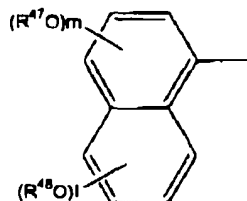
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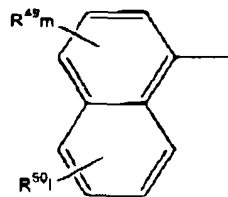
wherein General formula (8) has the formula:



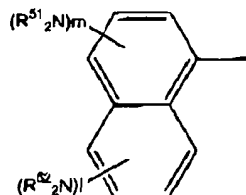
wherein General formula (9) has the formula:



wherein General formula (10) has the formula:



wherein General formula (11) has the formula:



(wherein, in the general formulas (6), (7), (8), (9), (10), and (11) above, R^{44} , R^{45} , and R^{46} each represent are separately selected from a group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, ~~or~~ and a fluoroalkyl group; R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are identical or different groups, ~~each representing~~ separately selected from a group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, ~~or~~ and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; and l is an integer of 0 to 3); ~~and~~ R^{43} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, ~~or~~ and an aryl group which may have a substituent.]

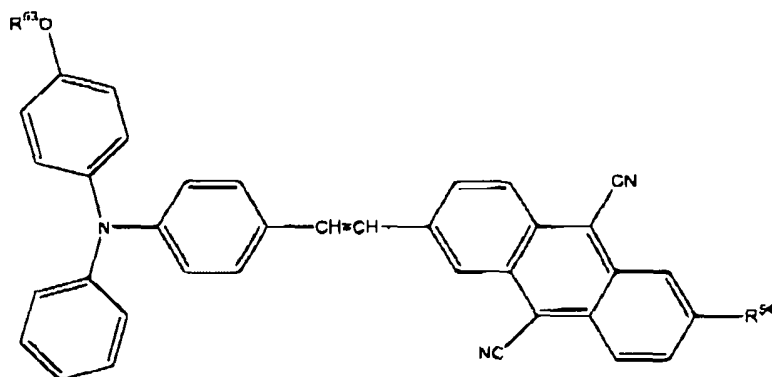
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3. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 2, wherein R^{44} , R^{45} , R^{46} , R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} each represent a group having 1 to 6 carbons.

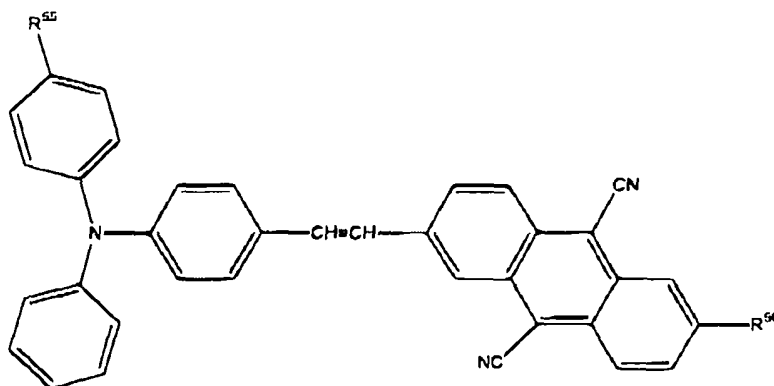
4. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 2, ~~wherein said compound which is represented by the following general formula (12), (13), (14), (15), (16), (17), or (18).~~ a formula selected from the group consisting of general formula 12, general formula 13, general formula 14, general formula 15, general formula 16, general formula 17, and general formula 18:

wherein General formula (12) has the formula:



(wherein, ~~in the general formula (12) above,~~ R^{53} ~~represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~and~~ ~~or~~ an aryl group which may have a substituent; ~~and~~ R^{54} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ ~~and~~ an aryl group which may have a substituent-);

wherein General formula (13) has the formula:

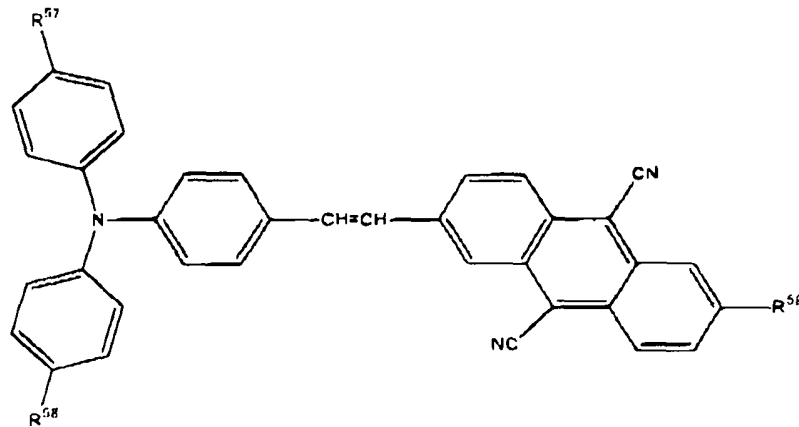


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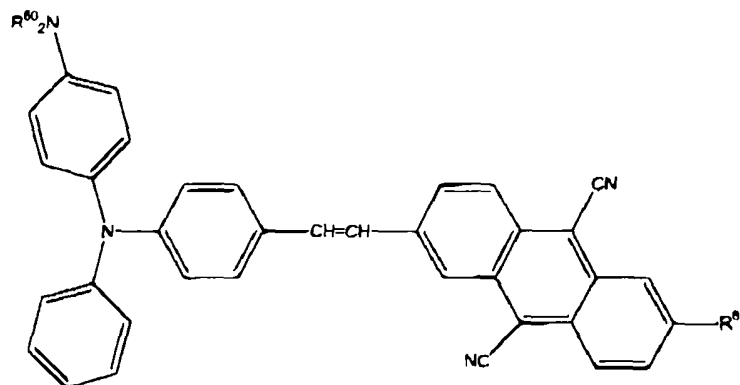
~~(wherein, in the general formula (13) above, R^{55} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, or and an aryl group which may have a substituent;~~ and R^{56} ~~represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-;~~

wherein General formula (14) has the formula:



~~(wherein, in the general formula (14) above, R^{57} and R^{58} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, or and an aryl group which may have a substituent;~~ and R^{59} ~~represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-;~~

wherein General formula (15) has the formula:



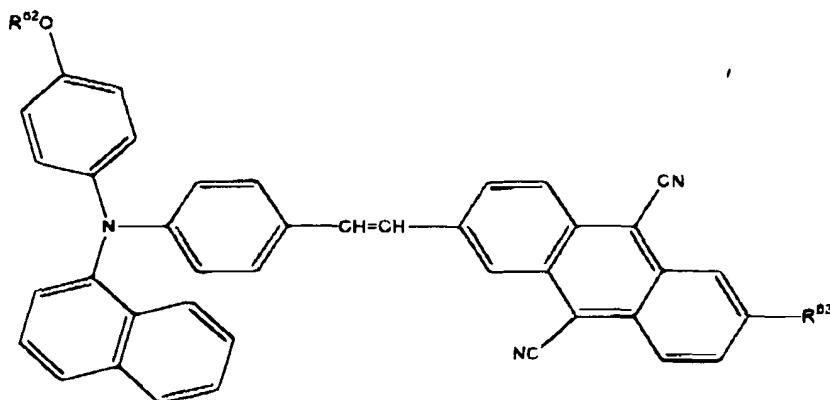
~~(wherein, in the general formula (15) above, R^{60} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent;~~ and R^{61} ~~represents is selected from the group consisting of~~

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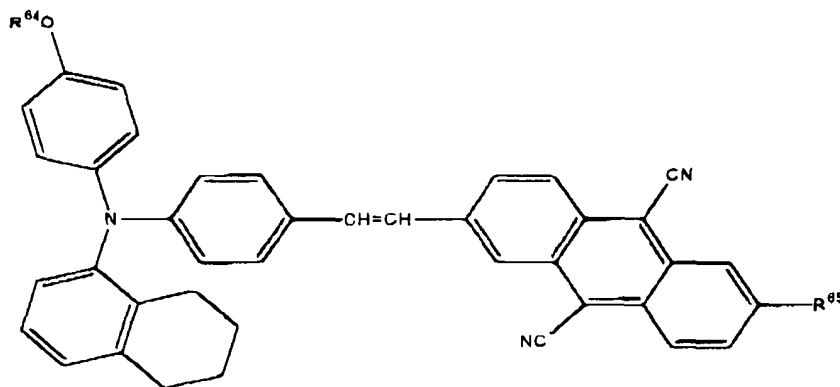
a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (16) has the formula:



(~~wherein, in the general formula (16) above~~), ~~R⁶² represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent-; and ~~R⁶³ represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-;

wherein General formula (17) has the formula:

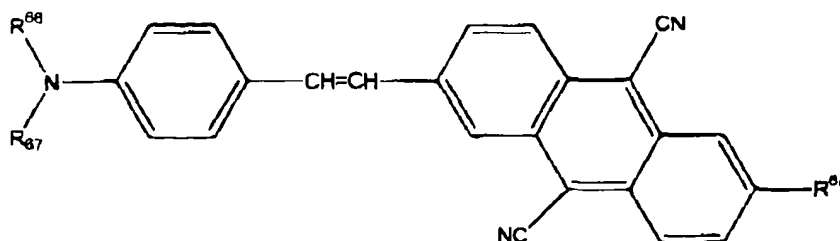


(~~wherein, in the general formula (17) above~~), ~~R⁶⁴ represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent-; and ~~R⁶⁵ represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-;

wherein General formula (18) has the formula:

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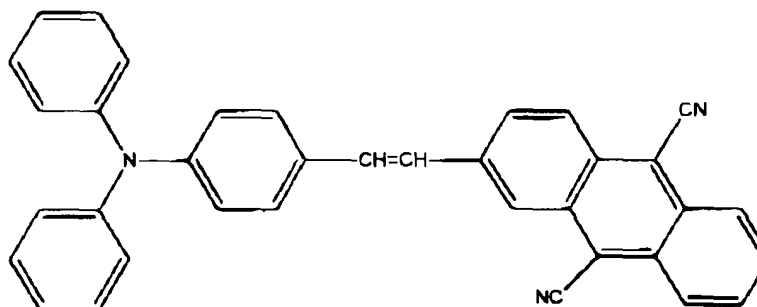
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(wherein, in the general formula (17) above), R^{66} and R^{67} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{68} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent.)

5. (currently amended) An aminostyrylanthracene compound as defined in according to Claim 2, which is represented by the following structural formula (19)-1, (19)-2, (19)-3, (19)-4, (19)-5, (19)-6, (19)-7, (19)-8, (19)-9, (19)-10, (19)-11, or (19)-12; wherein said compound has a formula selected from the group consisting of structural formula 19-1, structural formula 19-2, structural formula 19-3, structural formula 19-4, structural formula 19-5, structural formula 19-6, structural formula 19-7, structural formula 19-8, structural formula 19-9, structural formula 19-10, structural formula 19-11, and structural formula 19-12;

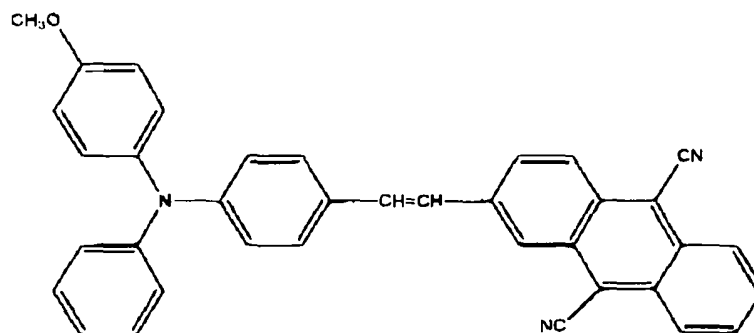
wherein Sstructural formula (19)-1 has the formula:



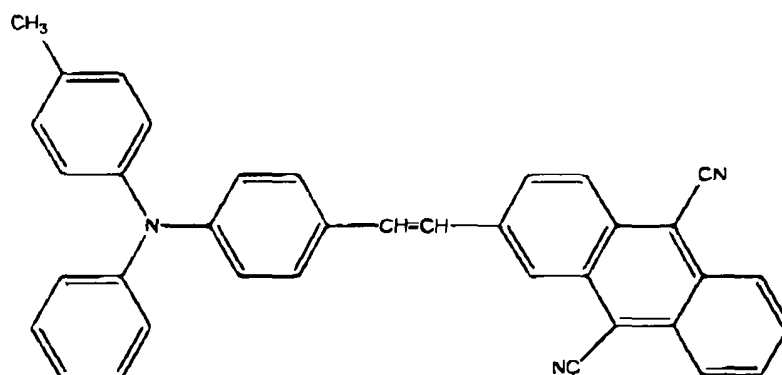
wherein Sstructural formula (19)-2 has the formula:

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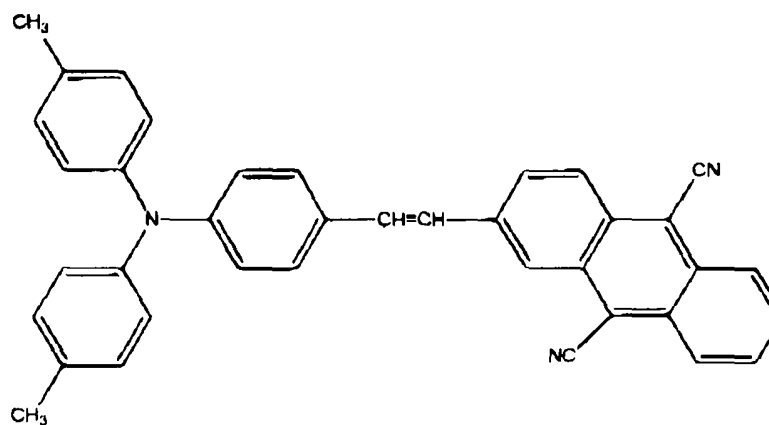
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wherein Structural formula (19)-3 has the formula:



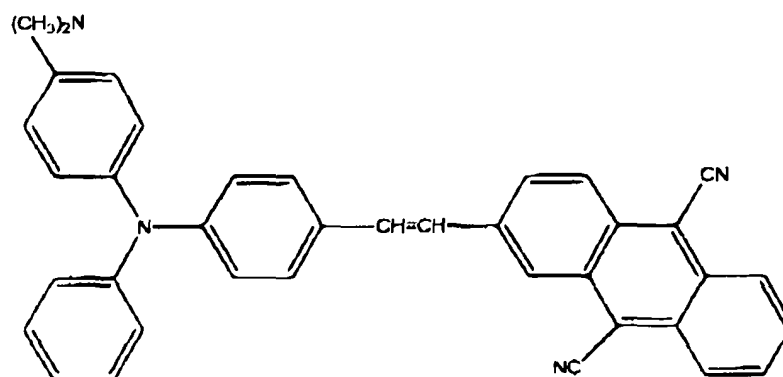
wherein Structural formula (19)-4 has the formula:



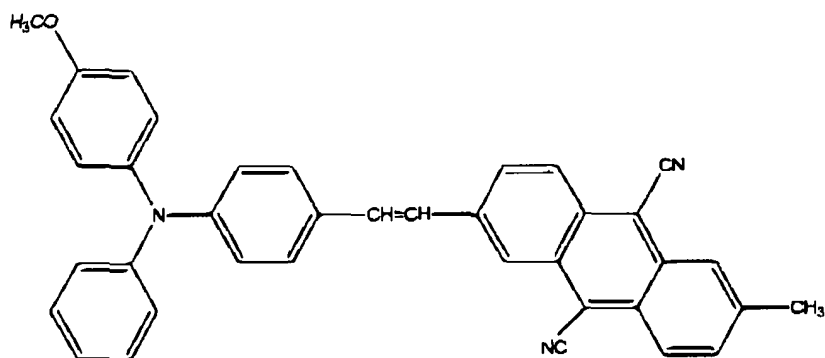
wherein Structural formula (19)-5 has the formula:

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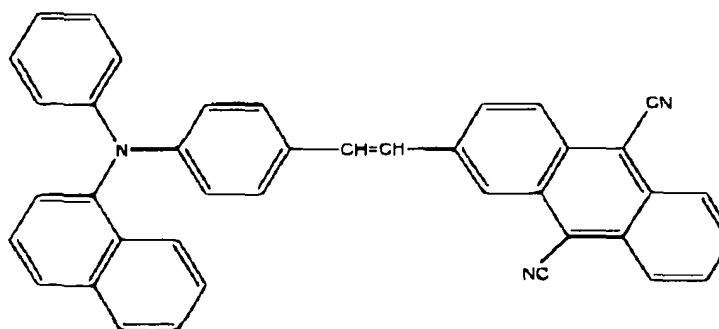
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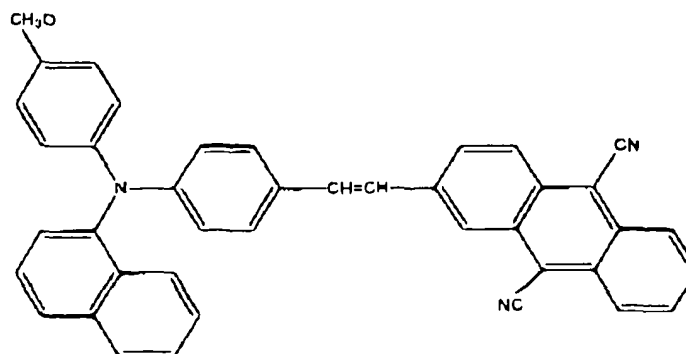
wherein structural formula (19)-6 has the formula:



wherein structural formula (19)-7 has the formula:



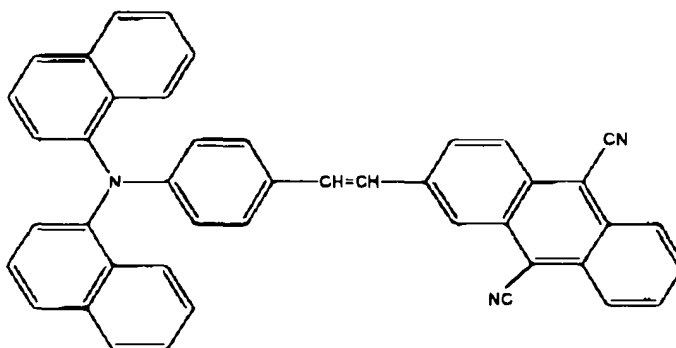
wherein structural formula (19)-8 has the formula:



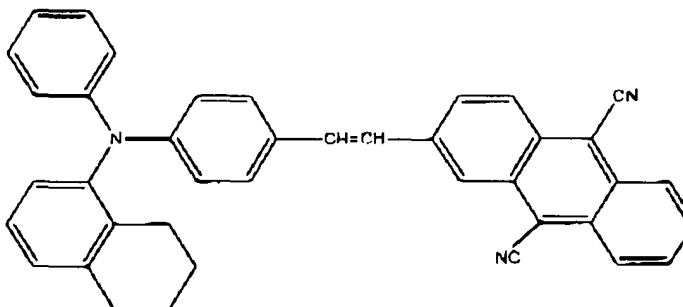
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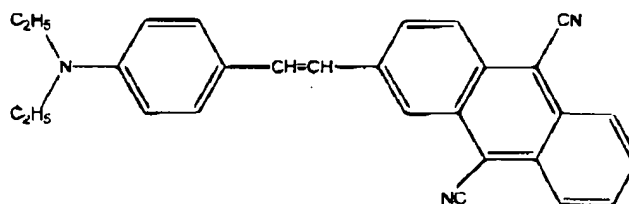
wherein ~~S~~structural formula (19)-9 has the formula:



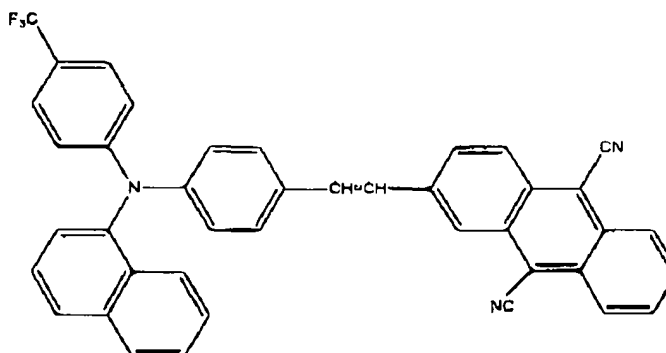
wherein ~~S~~structural formula (19)-10 has the formula:



wherein ~~S~~structural formula (19)-11 has the formula:



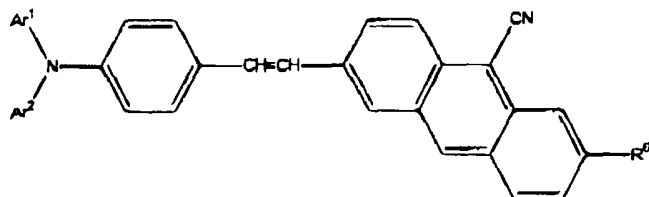
wherein ~~S~~structural formula (19)-12 has the formula:



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6. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 1, ~~which~~ wherein said compound is represented by ~~the following general formula (20) having the formula:~~ General formula (20)



~~{wherein, in the general formula 20 above, Ar¹ and Ar² are identical or different aryl groups which may have a substituent and, if they have a substituent, they represent a group selected from aryl groups represented by the following general formulas (6), (7), (8), (9), (10), and (11), wherein said substituent is selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10 and general formula 11;~~

wherein ~~G~~general formula (6) has the formula:



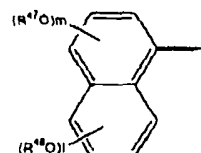
wherein ~~G~~general formula (7) has the formula:



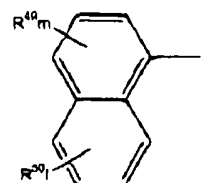
wherein ~~G~~general formula (8) has the formula:



wherein ~~G~~general formula (9) has the formula:



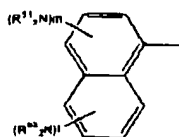
wherein ~~G~~general formula (10) has the formula:



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wherein General formula (11) has the formula:

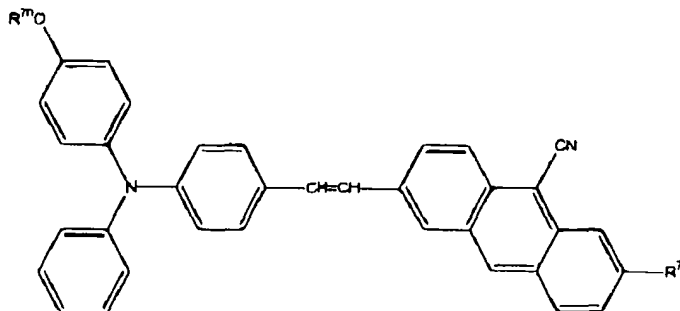


~~(wherein, in the general formulas (6), (7), (8), (9), (10), and (11) above, R^{44} , R^{45} , and R^{46} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon groups having one or more carbons, and or a fluoroalkyl group; R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are identical or different groups, each representing separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, or and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; and 1 is an integer of 0 to 3); and R^{69} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group, and or an aryl group which may have a substituent.)~~

7. (currently amended) An aminostyrylanthracene compound ~~as defined in according to Claim 6, in which wherein~~ R^{44} , R^{45} , R^{46} , R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} each represent a group having 1 to 6 carbons.

8. (currently amended) An aminostyrylanthracene compound ~~as defined in according to Claim 6, which is wherein~~ said compound is represented by the following general formula (21), (22), (23), (24), (25), (26), or (27): a formula selected from the group consisting of general formula 21, general formula 22, general formula 23, general formula 24, general formula 25, general formula 26, and general formula 27;

wherein General formula (21) has the formula:



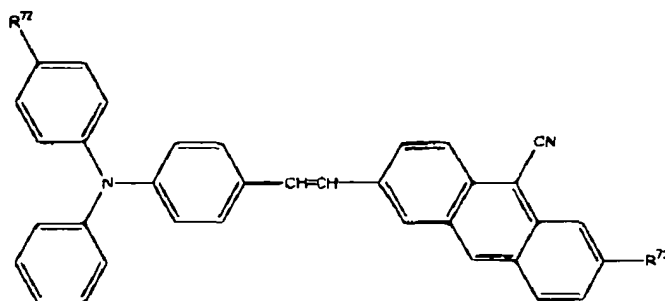
~~(wherein, in the general formula (21) above, R^{70} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{71} represents is selected from the group consisting of~~

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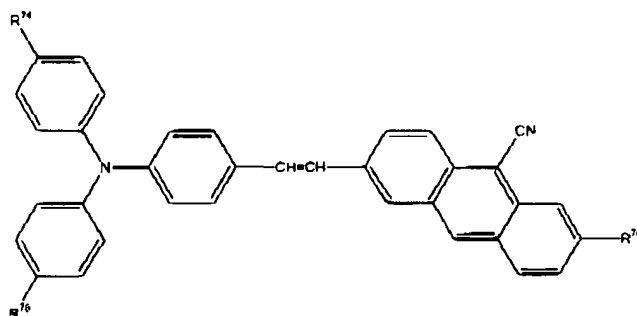
a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-;

wherein General formula (22) has the formula:



~~(wherein, in the general formula (22) above, R⁷² represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, ~~or~~ and ~~or~~ an aryl group which may have a substituent-; ~~and R⁷³ represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and ~~an aryl group which may have a substituent-;~~

wherein General formula (23) has the formula:

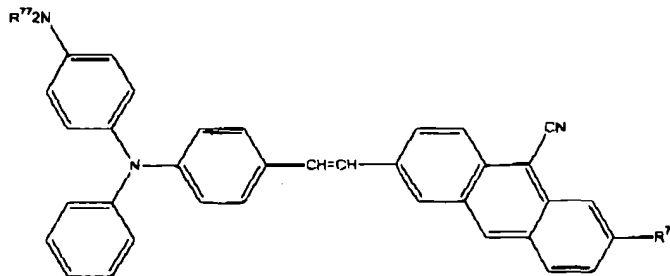


~~(wherein, in the general formula (23) above, R⁷⁴ and R⁷⁵ each represent~~ are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, ~~or~~ and ~~an aryl group which may have a substituent-;~~ ~~and R⁷⁶ represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and ~~an aryl group which may have a substituent-;~~

wherein General formula (24) has the formula:

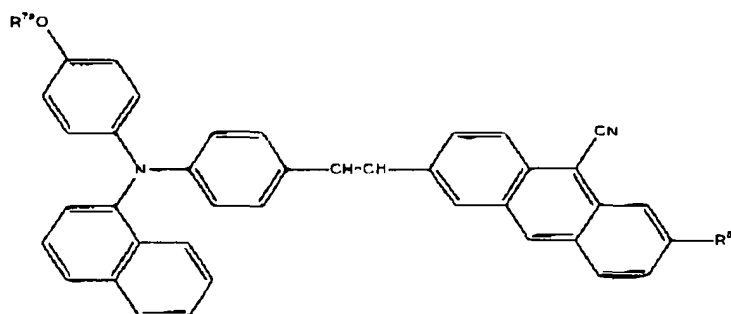
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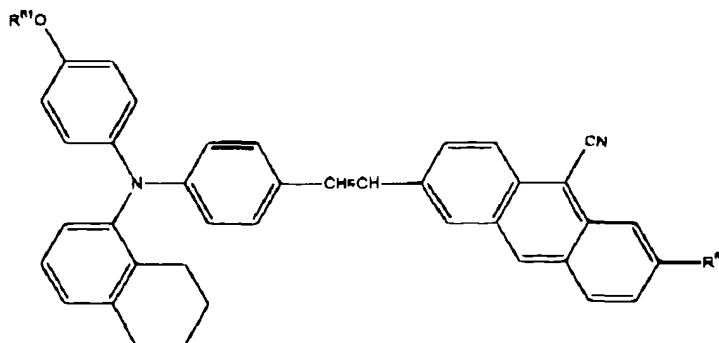
(wherein, in the general formula (24) above, R^{77} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{78} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (25) has the formula:



(wherein, in the general formula (25) above, R^{79} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{80} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (26) has the formula:

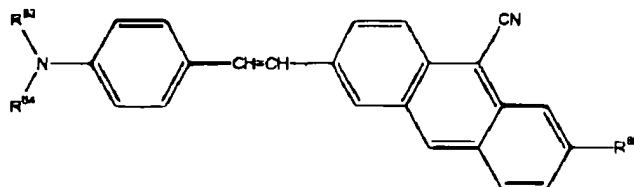


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(wherein, in the general formula (26) above, R^{81} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{82} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

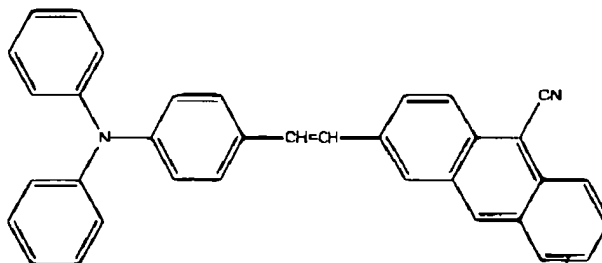
wherein G general formula (27) has the formula:



(wherein, in the general formula (27) above, R^{83} and R^{84} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent; and R^{85} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

9. (currently amended) An aminostyrylanthracene compound as defined in according to Claim 6, which wherein said compound is represented by the following structural formula (28)-1, (28)-2, (28)-3, (28)-4, (28)-5, (28)-6, (28)-7, (28)-8, (28)-9, (28)-10, (28)-11, or (28)-12: a formula selected from the group consisting of structural formula 28-1, structural formula 28-2, structural formula 28-3, structural formula 28-4, structural formula 28-5, structural formula 28-6, structural formula 28-7, structural formula 28-8, structural formula 28-9, structural formula 28-10, structural formula 28-11, and structural formula 28-12;

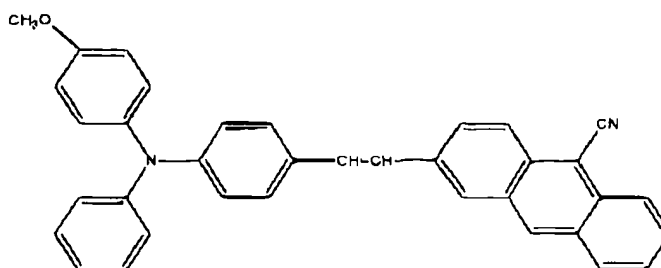
wherein S structural formula (28)-1 has the formula:



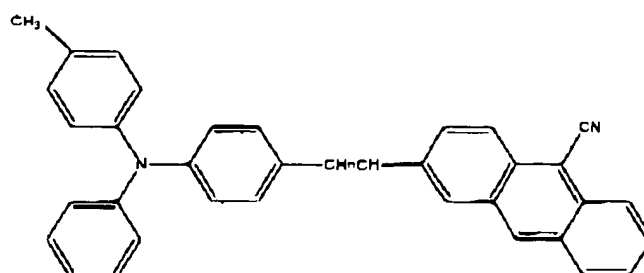
wherein S structural formula (28)-2 has the formula:

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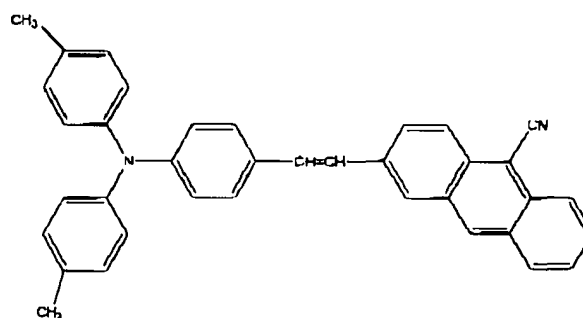
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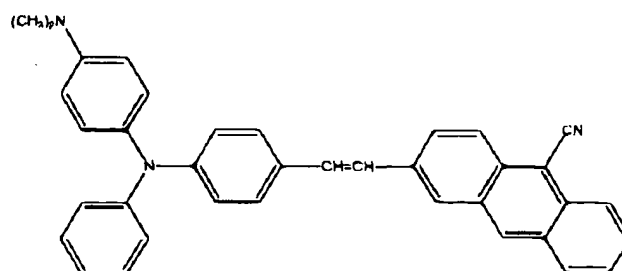
wherein structural formula (28)-3 has the formula:



wherein structural formula (28)-4 has the formula:



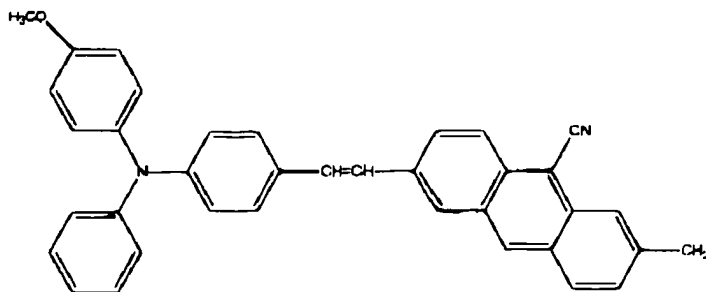
wherein structural formula (28)-5 has the formula:



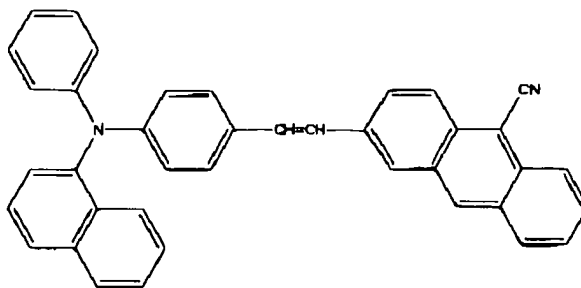
wherein structural formula (28)-6 has the formula:

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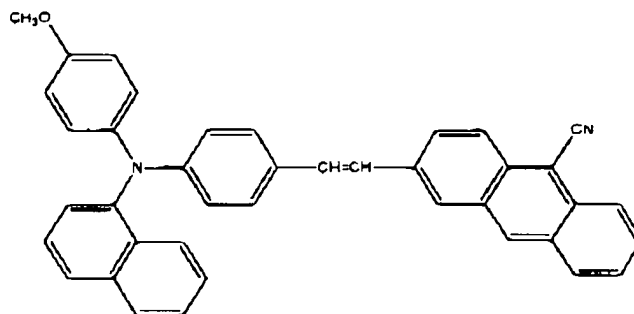
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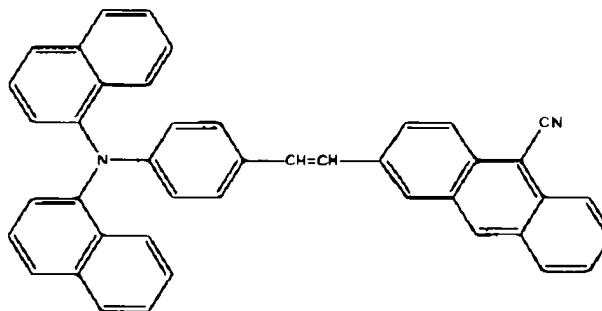
wherein Structural formula (28)-7 has the formula:



wherein Structural formula (28)-8 has the formula:



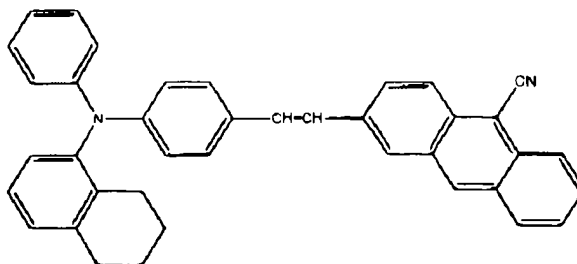
wherein Structural formula (28)-9 has the formula:



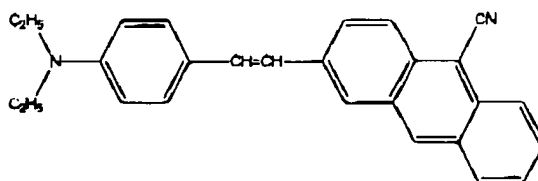
wherein Structural formula (28)-10 has the formula:

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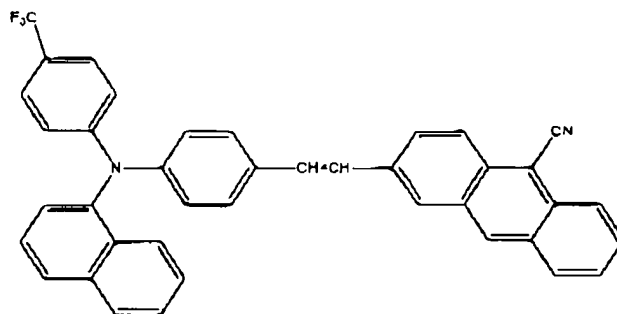
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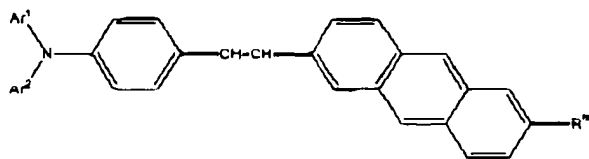
wherein ~~S~~structural formula (28)-11 has the formula: and



wherein ~~S~~structural formula (28)-12 has the formula:



10. (currently amended) An aminostyrylanthracene compound ~~as defined in~~
according to Claim 1, ~~which wherein said compound is represented by the following general~~
formula (29): having the formula:



~~(wherein, in the general formula (29) above, Ar¹ and Ar² are identical or different aryl groups which may have a substituent and, if they have a substituent, they represent a group selected from aryl groups represented by the following general formulas (6), (7), (8), (9), (10), and (11), wherein said substituent is selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10 and general formula 11;~~

wherein Ggeneral formula (6) has the formula:

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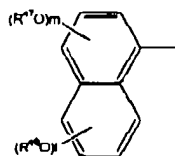
wherein General formula (7) has the formula:



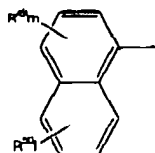
wherein General formula (8) has the formula:



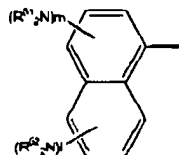
wherein General formula (9) has the formula:



wherein General formula (10) has the formula:



wherein General formula (11) has the formula:



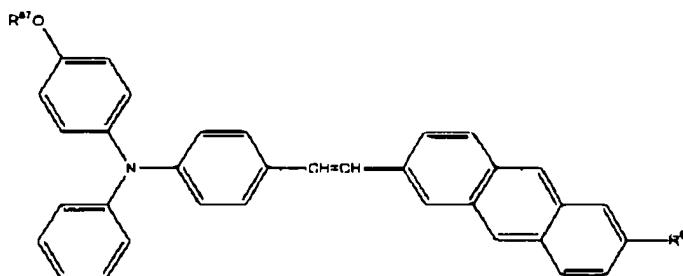
~~(wherein, in the general formulas (6), (7), (8), (9), (10), and (11) above, R^{44} , R^{45} , and R^{46} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon groups having one or more carbons, and of a fluoroalkyl group; R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are identical or different groups, each representing separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, of and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; and l is an integer of 0 to 3); and R^{86} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group, and of an aryl group which may have a substituent.}~~

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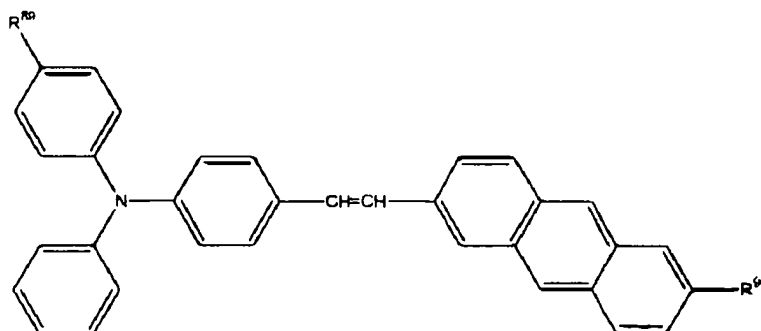
11. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 10, in which wherein R^{44} , R^{45} , R^{46} , R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} each represent a group having 1 to 6 carbons.

12. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 10, which wherein said compound is represented by the following general formula (30), (31), (32), (33), (34), (35), or (36) a formula selected from the group consisting of general formula 30, general formula 31, general formula 32, general formula 33, general formula 34, general formula 35, and general formula 36;
wherein Ggeneral formula (30) has the formula:



(~~wherein, in the general formula (30) above, R^{87} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent;~~ and R^{88} ~~represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-;~~

wherein Ggeneral formula (31) has the formula:



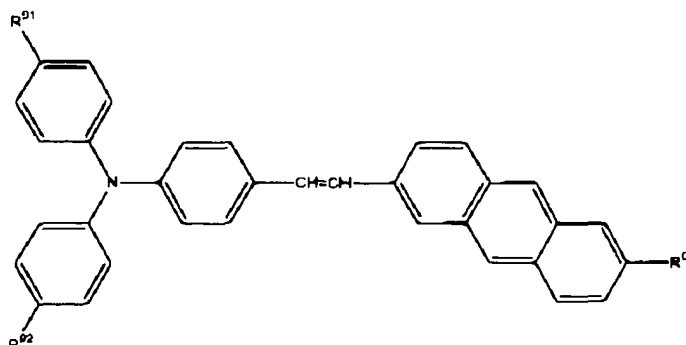
(~~wherein, in the general formula (31) above, R^{89} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyle group, and or an aryl group which may have a substituent;~~ and R^{90} ~~represents is~~

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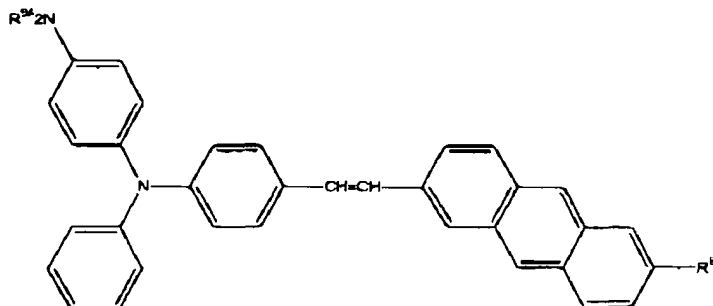
selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (32) has the formula:



~~(wherein, in the general formula (32) above, R⁹¹ and R⁹² each represent~~ are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, or and an aryl group which may have a substituent; ~~and R⁹³ represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (33) has the formula:

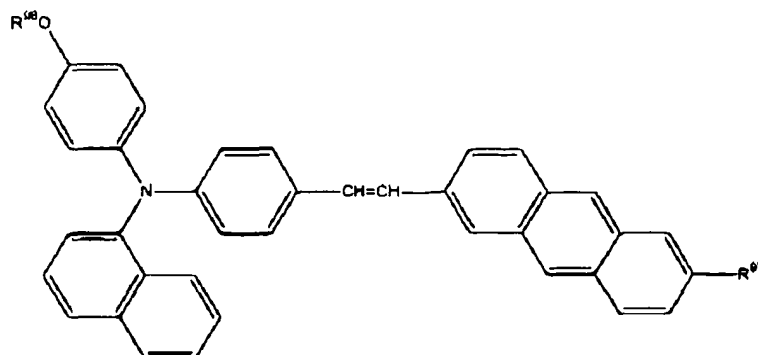


~~(wherein, in the general formula (33) above, R⁹⁴ represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; ~~and R⁹⁵ represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (34) has the formula:

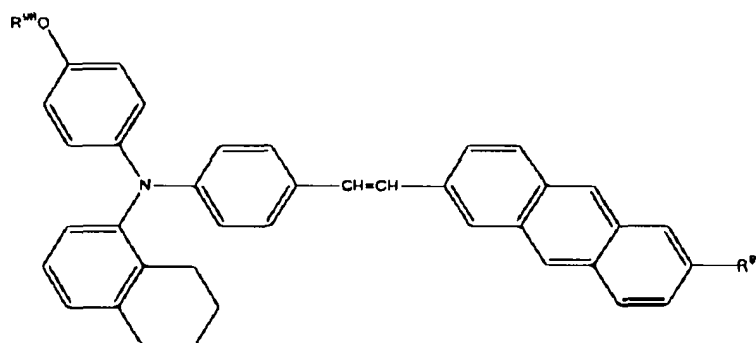
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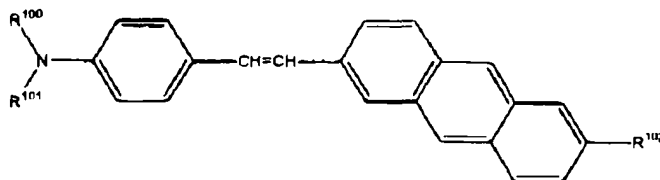
(wherein, in the general formula (34) above, R^{96} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and R^{97} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (35) has the formula:



(wherein, in the general formula (35) above, R^{98} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and R^{99} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (36) has the formula:



(wherein, in the general formula (36) above, R^{100} and R^{101} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6

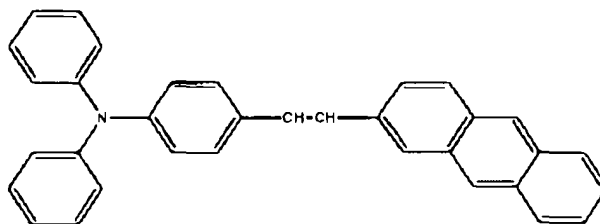
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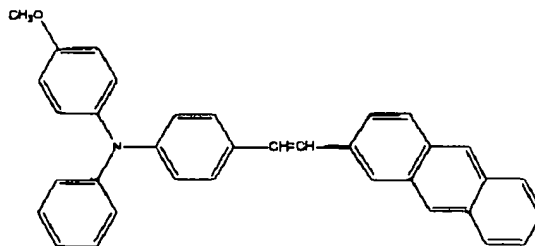
carbons, ~~or~~ and an aryl group which may have a substituent; and R^{102} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent;

13. (currently amended) An aminostyrylanthracene compound ~~as defined in~~ according to Claim 10, which wherein said compound is represented by the following structural formula (37)-1, (37)-2, (37)-3, (37)-4, (37)-5, (37)-6, (37)-7, (37)-8, (37)-9, (37)-10, (37)-11, or (37)-12, a formula selected from the group consisting of structural formula 37-1, structural formula 37-2, structural formula 37-3, structural formula 37-4, structural formula 37-5, structural formula 37-6, structural formula 37-7, structural formula 37-8, structural formula 37-9, structural formula 37-10, structural formula 37-11, and structural formula 37-12;

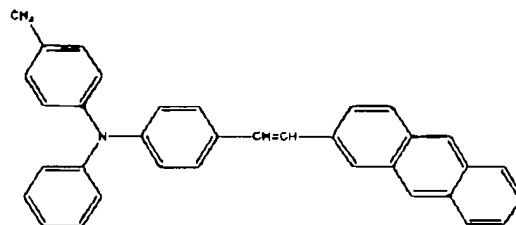
wherein Sstructural formula (37)-1 has the formula:



wherein Sstructural formula (37)-2 has the formula:



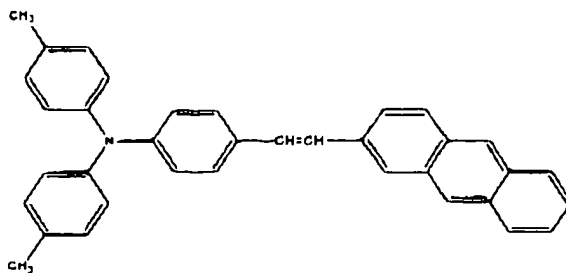
wherein Sstructural formula (37)-3 has the formula:



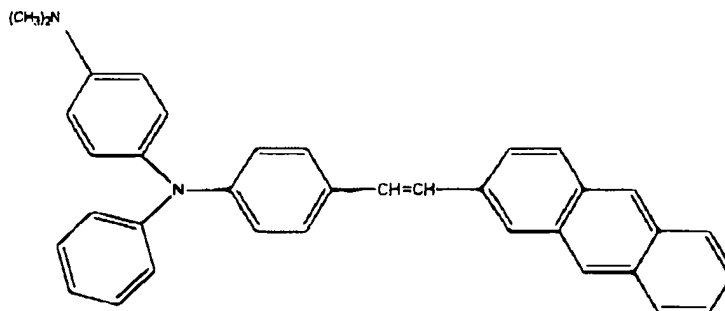
wherein Sstructural formula (37)-4 has the formula:

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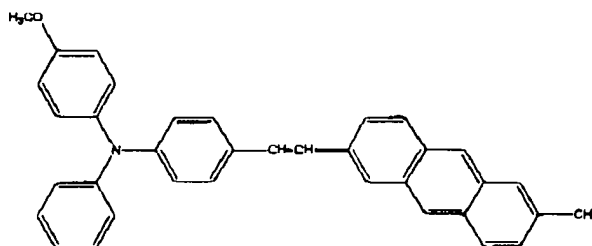
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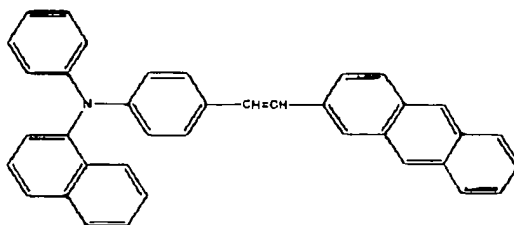
wherein Sstructural formula (37)-5 has the formula:



wherein Sstructural formula (37)-6 has the formula:



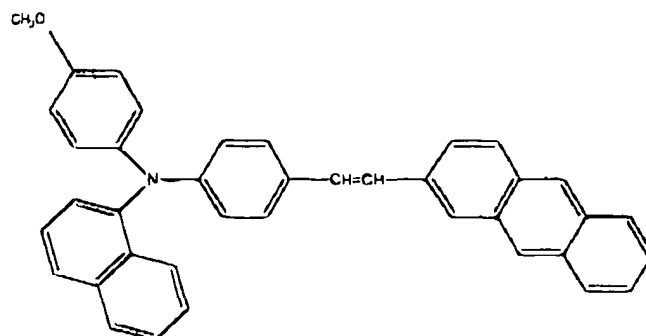
wherein Sstructural formula (37)-7 has the formula:



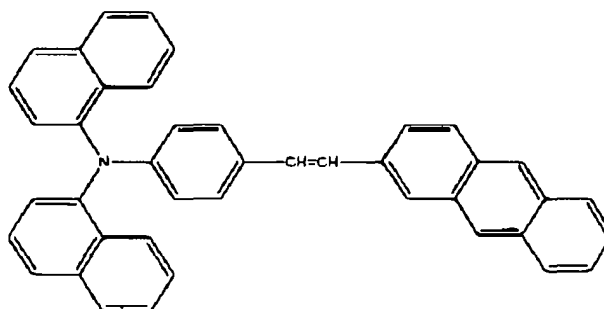
wherein Sstructural formula (37)-8 has the formula:

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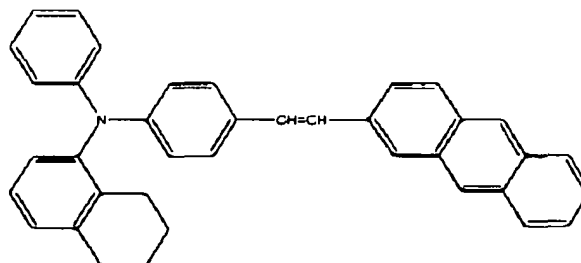
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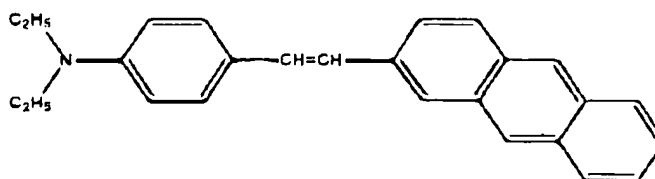
wherein structural formula (37)-9 has the formula:



wherein structural formula (37)-10 has the formula:



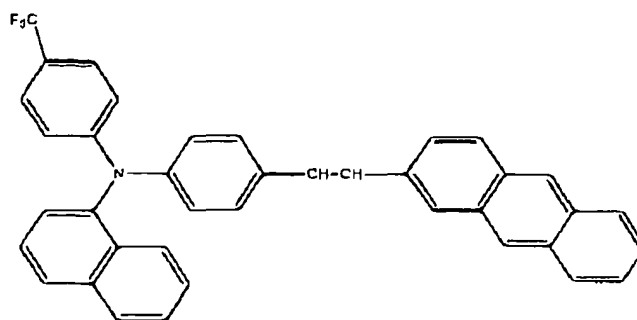
wherein structural formula (37)-11 has the formula: and



wherein structural formula (37)-12 has the formula:

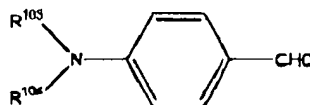
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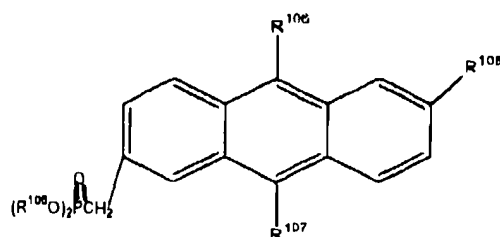


14. (currently amended) A process for producing an aminostyrylanthracene compound which comprises the following steps:

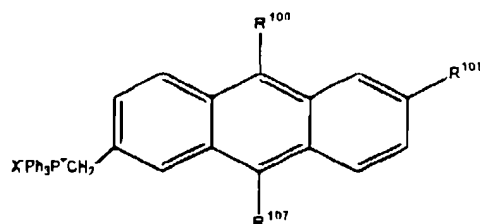
condensing an aminobenzaldehyde represented by the following having a general formula [V] with a phosphonic ester represented by the following general formula [VI] or a phosphonium salt represented by the following general formula [VII], thereby giving an aminostyrylanthracene compound represented by the following general formula [I], [II], [III], or [IV]. General formula [V]



(wherein, in the general formula [V] above, R^{103} and R^{104} each represent are separately selected from the group corresponding to the following consisting of R^1 , R^2 , R^{11} , R^{12} , R^{21} , R^{22} , R^{31} , and R^{39}), with a phosphonic ester having a General formula [VI]:



or a phosphonium salt having a General formula [VII]:



(wherein, in the general formulas [VI] and [VII] above, R^{105} represents is a hydrocarbon group; R^{106} and R^{107} each represent are separately selected from the group corresponding to the

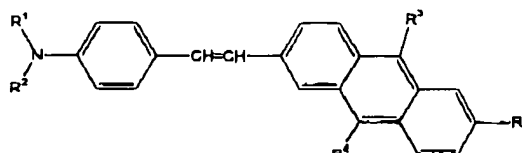
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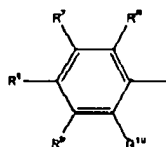
following consisting of R^3 , R^4 , R^{13} , R^{14} , R^{23} , R^{24} , R^{40} , or R^{41} ; R^{108} represents is selected from the group corresponding to the following consisting of R^5 , R^{16} , R^{25} , and R^{42} ; and X represents is a halogen atom-;

thereby forming an aminostyrylanthracene compound represented by a formula selected from the group consisting of general formula I, general formula II, general formula III, and general formula IV;

wherein General formula {I} has the formula:

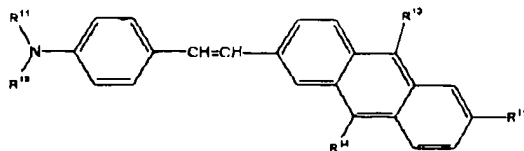


{wherein, in the general formula {I} above, R^2 represents is an unsubstituted aryl group; R^3 and R^4 are identical or different groups wherein at least one of R^3 and R^4 is selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, or a halogen atom; R^5 is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, and an aryl group which may have a substituent; and R^1 represents is an aryl group represented by the following having general formula (1); General formula (1)}



(wherein, in the general formula (1) above, R^6 , R^7 , R^8 , R^9 , and R^{10} are identical or different groups, each representing separately selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, a fluoroalkyl group, or and an aryl group which may have a substituent-;

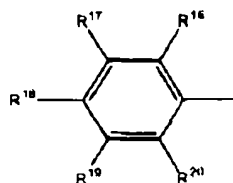
wherein General formula {II} has the formula:



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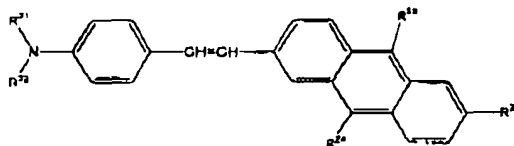
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~~(wherein, in the general formula (2) above, R^{13} and R^{14} are identical or different groups wherein at least one of R^{13} and R^{14} being selected from the group consisting of hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, and a halogen atom; R^{15} is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, and an aryl group which may have a substituent; R^{11} and R^{12} are identical or different groups wherein each representing is an aryl group represented by the following having a general formula (2);~~ General formula (2)

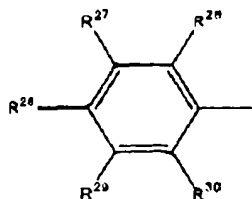


~~(wherein, in the general formula (2) above, R^{16} , R^{17} , R^{18} , R^{19} , and R^{20} are identical or different groups, each representing separately selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, a fluoroalkyl group, or and an aryl group which may have a substituent-;~~

wherein General formula {III} has the formula:



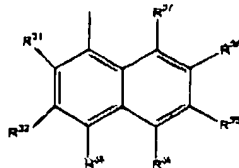
~~(wherein, in the general formula (III) above, R^{23} and R^{24} are identical or different groups wherein at least one of R^{23} and R^{24} are selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, and a halogen atom; R^{25} is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, and any aryl group which may have a substituent; R^{21} represents is an aryl group represented by the following having a general formula (3);~~ General formula (3)



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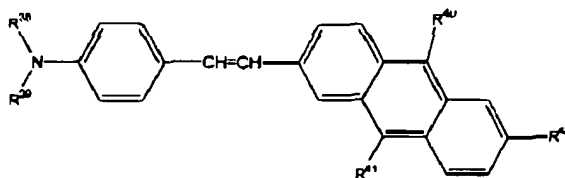
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(wherein, in the general formula (3) above, R^{26} , R^{27} , R^{28} , R^{29} , and R^{30} are identical or different groups, each representing separately selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, and a fluoroalkyl group); and R^{22} represents is an aryl group represented by the following having a general formula (4): General formula (4)



(wherein, in the general formula (4) above, R^{31} , R^{32} , R^{33} , R^{34} , R^{35} , R^{36} , and R^{37} are identical or different groups each representing separately selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon oxy group having one or more carbons, a hydrocarbon group, a hydrocarbon amino group, a fluoroalkyl group, or and an aryl group which may have a substituent); and

wherein General formula {IV} has the formula:



{wherein, in the general formula {IV} above, R^{38} and R^{39} are identical or different groups wherein at least one of them being R^{38} and R^{39} is selected from the group consisting of a hydrogen atom, or and a saturated or unsaturated hydrocarbon group having one or more carbons; R^{40} and R^{41} are identical or different groups, at least of them being separately selected from the group consisting of a hydrogen atom, a cyano group, a fluoroalkyl group, a nitro group, or and a halogen atom; and R^{42} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, or and an aryl group which may have a substituent.}

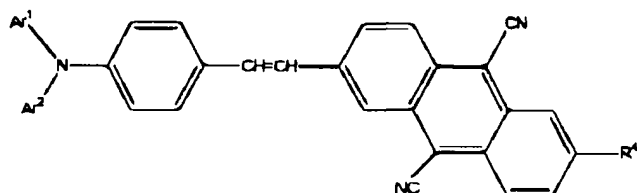
15. (currently amended) A process for producing an aminostyrylanthracene compound as defined in according to Claim 14, wherein said process further comprises the steps of:

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performing said condensation by Wittig-Horner reaction or Wittig reaction;
treating said phosphonic ester ~~and/or~~, in the alternative, said phosphonium salt with a base in a solvent; thereby ~~giving~~ producing carboanions;₂ and
condensing ~~these~~ said carboanions with said aminobenzaldehyde.

16. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in according to Claim 14; wherein an said aminostyrylanthracene compound is represented by the following a general formula (5) having the formula:~~ General formula (5)



~~{wherein, in the general formula (5) above, Ar¹ and Ar² are identical or different aryl groups which may have a substituent and, if they have a substituent, they represent a group selected from aryl groups represented by the following general formulas (6), (7), (8), (9), (10), and (11), selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10, and general formula 11;~~

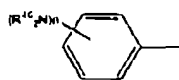
wherein ~~G~~general formula (6) has the formula:



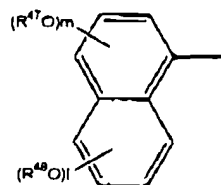
wherein ~~G~~general formula (7) has the formula:



wherein ~~G~~general formula (8) has the formula:



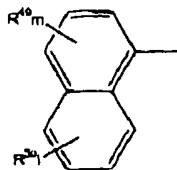
wherein ~~G~~general formula (9) has the formula:



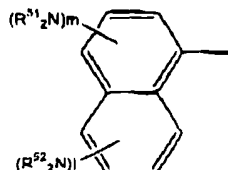
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wherein General formula (10) has the formula:

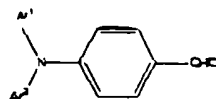


wherein General formula (11) has the formula:

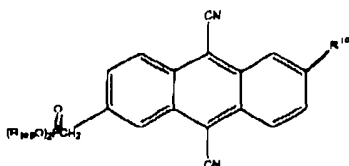


(wherein, in the general formulas (6), (7), (8), (9), (10), and (11) above, R^{44} , R^{45} , and R^{46} each represent are separately selected from a group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, or and a fluoroalkyl group; R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are identical or different groups, each representing separately selected from a group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, or and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; and l is an integer of 0 to 3); and R^{43} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having one or more carbons, or and an aryl group which may have a substituent.)

wherein said compound is obtained by condensing a 4-(N,N-diarylamino)benzaldehyde represented by having a the following general formula (38); with a phosphonic ester represented by the following general formula (39) or a phosphonium salt represented by the following general formula (40):



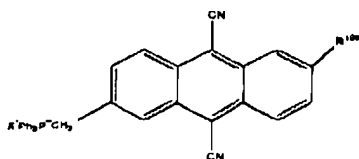
with a phosphonic ester having a general formula 39:



or, in the alternative, a phosphonium salt having a general formula 40:

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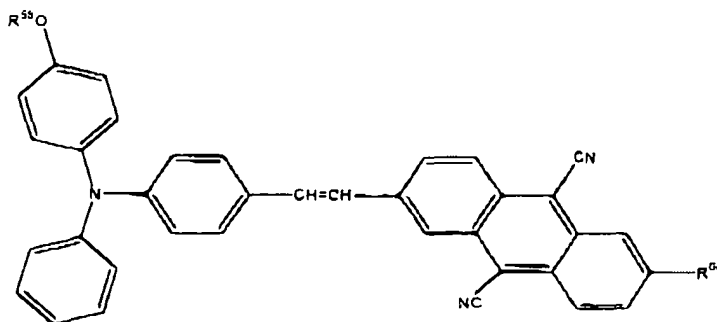
(wherein, in the general formulas (38), (39), and (40) above, Ar^1 , Ar^2 , R^{105} , and X are defined as above.)

17. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 14, wherein R^{105} is a saturated hydrocarbon group having 1 to 4 carbons.

18. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 16, wherein R^{44} , R^{45} , R^{46} , R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are groups having 1 to 6 carbons.

19. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 16, wherein said process gives an aminostyrylanthracene compound ~~represented by the following general formula (12), (13), (14), (15), (16), (17), or (18) having a formula selected from the group consisting of general formula 12, general formula 13, general formula 14, general formula 15, general formula 16, general formula 17, and general formula 18:~~

wherein General formula (12) has the formula:



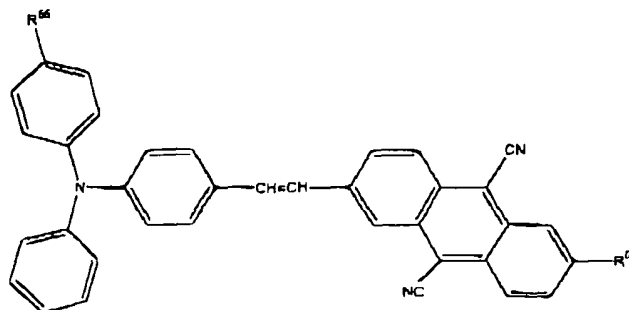
(wherein, in the general formula (12) above, R^{53} ~~represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~and~~ R^{54} ~~represents~~ is selected from the group consisting of

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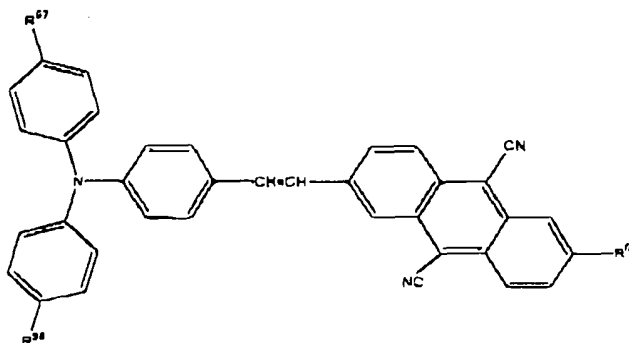
a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (13) has the formula:



~~(wherein, in the general formula (13) above, R⁵⁵ represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, or and an aryl group which may have a substituent-; and R⁵⁶ represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);~~

wherein General formula (14) has the formula:

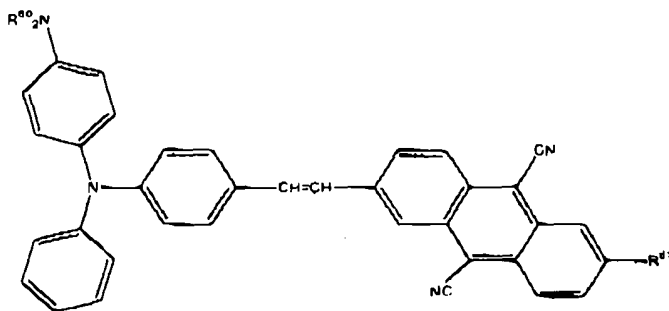


~~(wherein, in the general formula (14) above, R⁵⁷ and R⁵⁸ each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, or and an aryl group which may have a substituent-; and R⁵⁹ represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);~~

wherein General formula (15) has the formula:

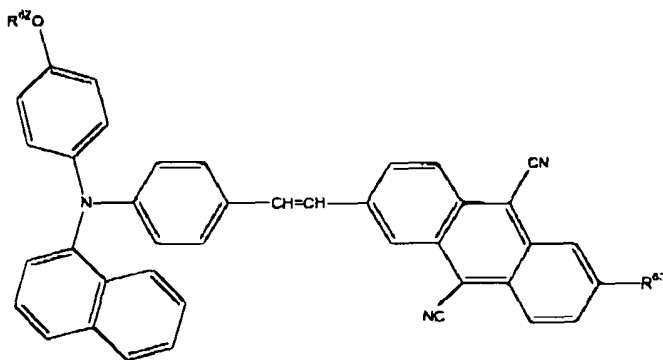
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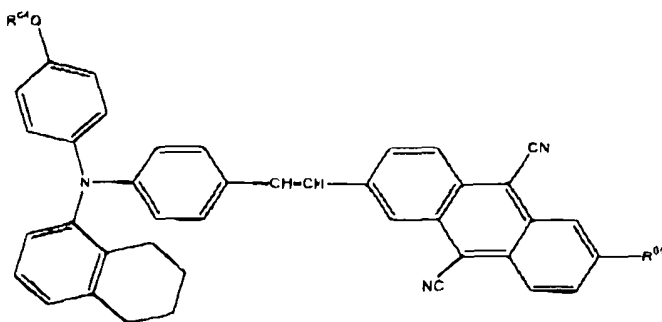
(wherein, in the general formula (15) above), R^{60} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{61} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent;);

wherein General formula (16) has the formula:



(wherein, in the general formula (16) above), R^{62} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{63} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent;);

wherein General formula (17) has the formula:

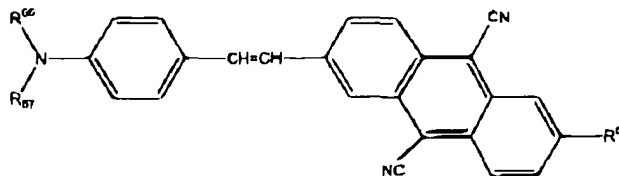


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(wherein, in the general formula (17) above), R^{64} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and ~~or~~ an aryl group which may have a substituent; and R^{65} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent;)

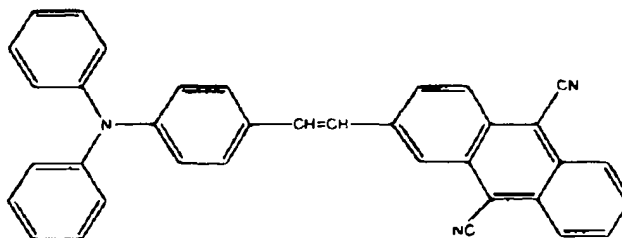
wherein General formula (18) has the formula:



(wherein, in the general formula (17) above), R^{66} and R^{67} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and ~~or~~ an aryl group which may have a substituent; and R^{68} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent.)

20. (currently amended) A process for producing an aminostyrylanthracene compound as ~~defined in~~ according to Claim 16; wherein said process gives an aminostyrylanthracene compound represented by the following structural formula (19) 1, (19) 2, (19) 3, (19) 4, (19) 5, (19) 6, (19) 7, (19) 8, (19) 9, (19) 10, (19) 11, or (19) 12; wherein said compound has a formula selected from the group consisting of structural formula 19-1, structural formula 19-2, structural formula 19-3, structural formula 19-4, structural formula 19-5, structural formula 19-6, structural formula 19-7, structural formula 19-8, structural formula 19-9, structural formula 19-10, structural formula 19-11, and structural formula 19-12;

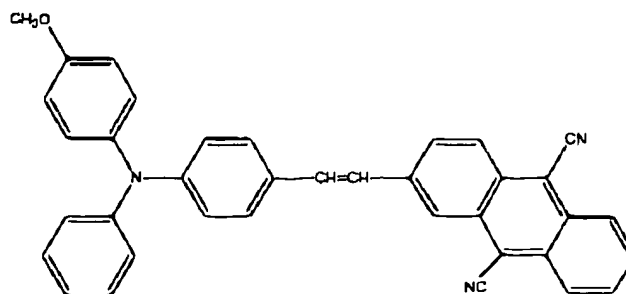
wherein Sstructural formula (19)-1 has the formula:



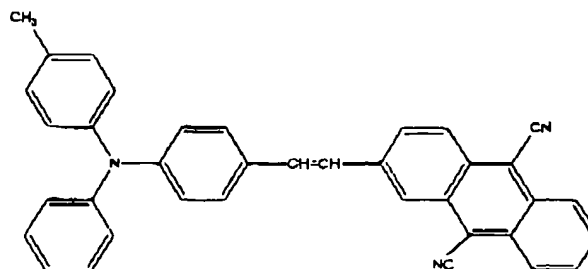
wherein Sstructural formula (19)-2 has the formula:

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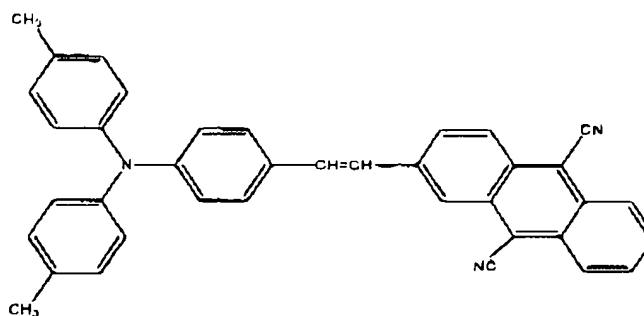
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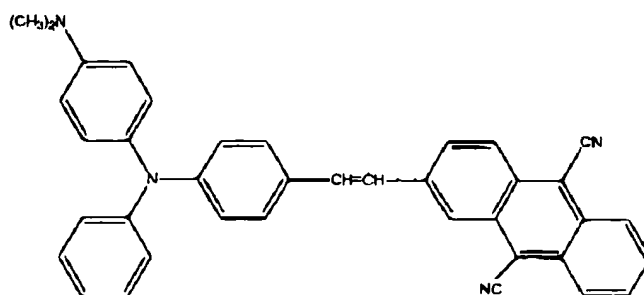
wherein Structural formula (19)-3 has the formula:



wherein Structural formula (19)-4 has the formula:



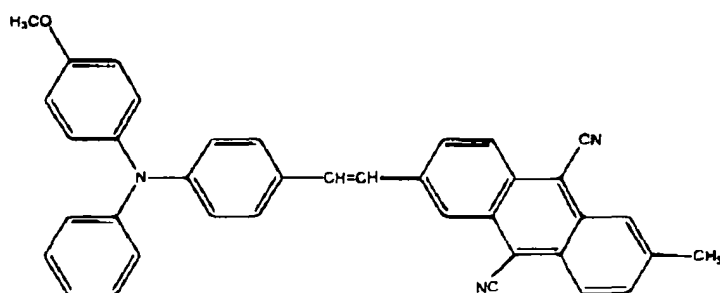
wherein Structural formula (19)-5 has the formula:



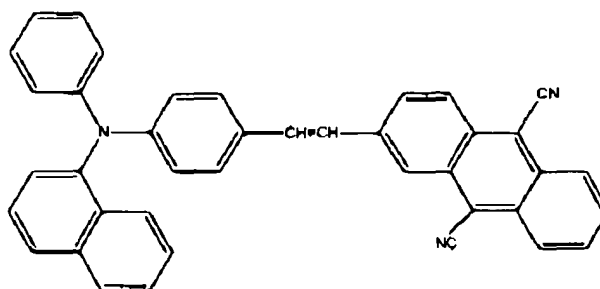
wherein Structural formula (19)-6 has the formula:

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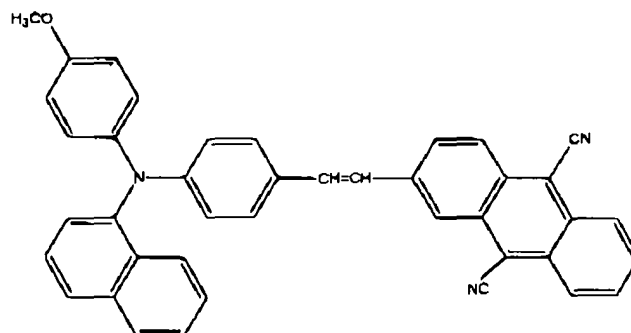
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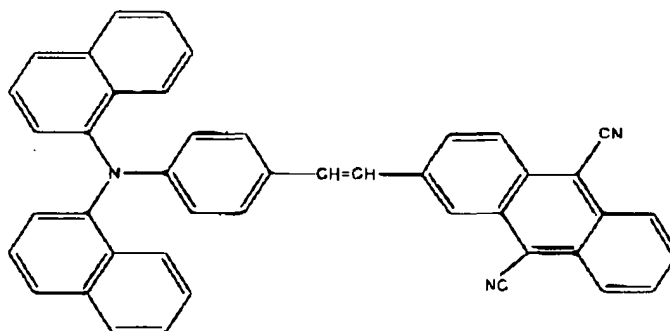
wherein Structural formula (19)-7 has the formula:



wherein Structural formula (19)-8 has the formula:



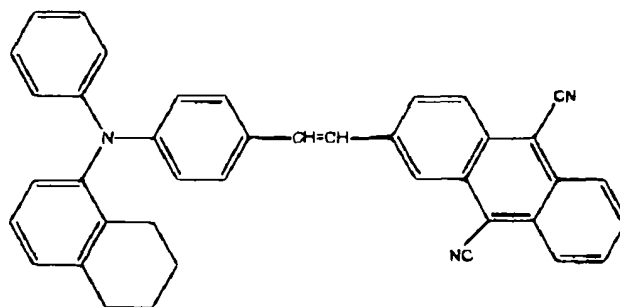
wherein Structural formula (19)-9 has the formula:



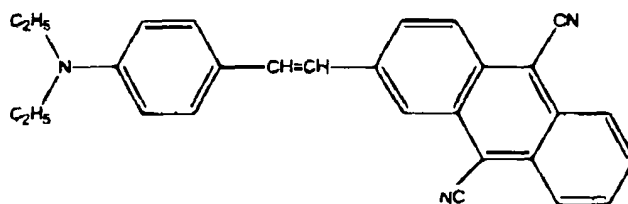
wherein Structural formula (19)-10 has the formula:

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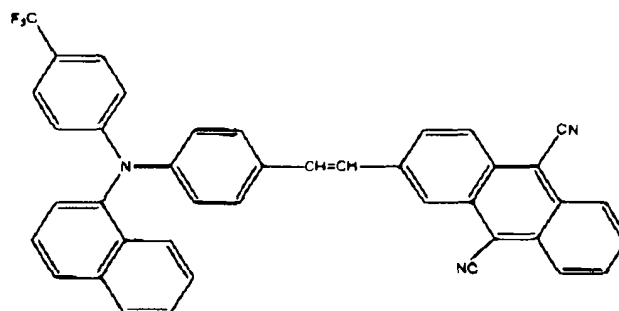
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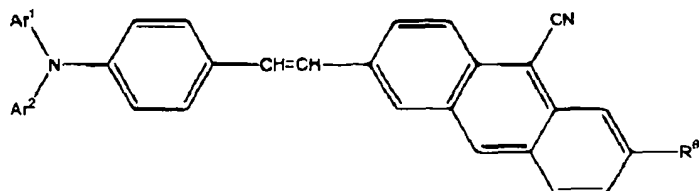
wherein ~~S~~ structural formula (19)-11 has the formula:



wherein ~~S~~ structural formula (19)-12 has the formula:



21. (currently amended) A process for producing an aminostyrylanthracene compound as defined in ~~according to Claim 14,~~ wherein said compound is represented by the following general formula (20) having the formula: ~~General formula (20)~~



~~{wherein, in the general formula 20 above, Ar¹ and Ar² are identical or different aryl groups which may have a substituent and, if they have a substituent, they represent a group selected from aryl groups represented by the following general formulas (6), (7), (8), (9), (10), and (11), wherein said substituent is selected from the group consisting of general formula 6,~~

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general formula 7, general formula 8, general formula 9, general formula 10 and general formula 11;

wherein General formula (6) has the formula:



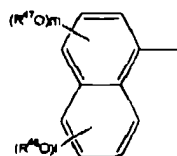
wherein General formula (7) has the formula:



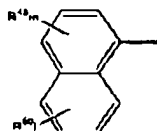
wherein General formula (8) has the formula:



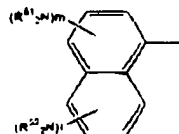
wherein General formula (9) has the formula:



wherein General formula (10) has the formula:



wherein General formula (11) has the formula:

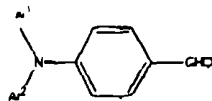


(~~wherein, in the general formulas (6), (7), (8), (9), (10), and (11) above, R⁴⁴, R⁴⁵, and R⁴⁶ each represent~~ are separately selected from the group consisting of a saturated or unsaturated hydrocarbon groups having one or more carbons, and ~~or a fluoroalkyl group;~~ R⁴⁷, R⁴⁸, R⁴⁹, R⁵⁰, R⁵¹, and R⁵² are identical or different groups, each representing separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, or and a fluoroalkyl group; ~~n is an integer of 0 to 5; m is an integer of 0 to 3; and l is an integer of 0 to 3;~~ and R⁶⁹ represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group, and ~~or an aryl group which may have a substituent.~~)

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wherein said compound is obtained by condensing 4-(N,N-diaryl)benzaldehyde represented by the following having a general formula (38); with a phosphonic ester represented by the following general formula (41) or a phosphonium salt represented by the following general formula (42). General formula (38):



wherein Ar¹ and Ar² are identical or different aryl groups which may have a substituent selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10, and general formula 11;

wherein general formula 6 has the formula:



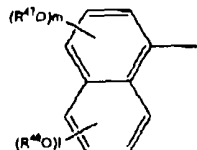
wherein general formula 7 has the formula:



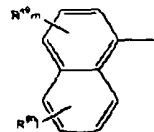
wherein general formula 8 has the formula:



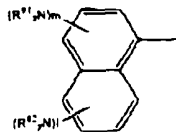
wherein general formula 9 has the formula:



wherein general formula 10 has the formula:



wherein general formula 11 has the formula:

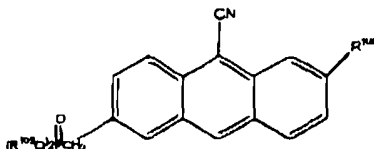


wherein R⁴⁴, R⁴⁵, and R⁴⁶ each represent a saturated or unsaturated hydrocarbon group having one or more carbons; R⁴⁷, R⁴⁸, R⁴⁹, R⁵⁰, R⁵¹, and R⁵² are identical or different groups

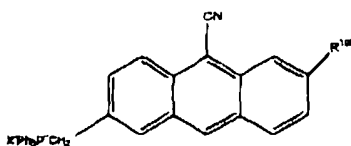
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separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; l is an integer of 0 to 3;
with a phosphonic ester having a general formula 39:



or, in the alternative, a phosphonium salt having a general formula 40:

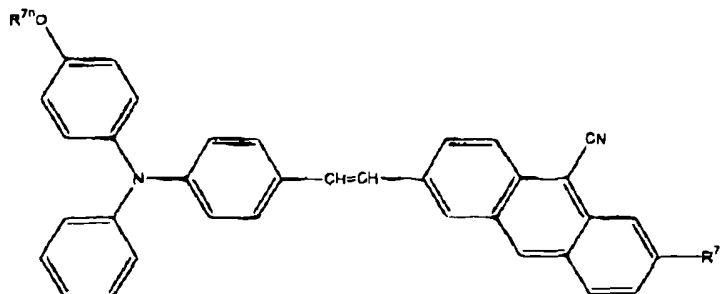


(wherein, in the general formulas (38), (41), and (42) above, Ar¹, Ar², R¹⁰⁵, and X are defined as above.); and R¹⁰⁸ is selected from the group consisting of R⁵, R¹⁶, R²⁵, and R⁴², and X is a halogen atom.

22. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 21, wherein R⁴⁴, R⁴⁵, R⁴⁶, R⁴⁷, R⁴⁸, R⁴⁹, R⁵⁰, R⁵¹, and R⁵² each represent a ~~are~~ groups having 1 to 6 carbons.

23. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 21; wherein said process gives an aminostyrylanthracene compound represented by ~~represented by the following general formula (21), (22), (23), (24), (25), (26), or (27). a formula selected from the group consisting of general formula 21, general formula 22, general formula 23, general formula 24, general formula 25, general formula 26, and general formula 27;~~

wherein Ggeneral formula (21) has the formula:

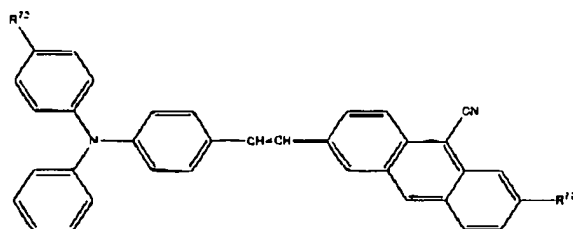


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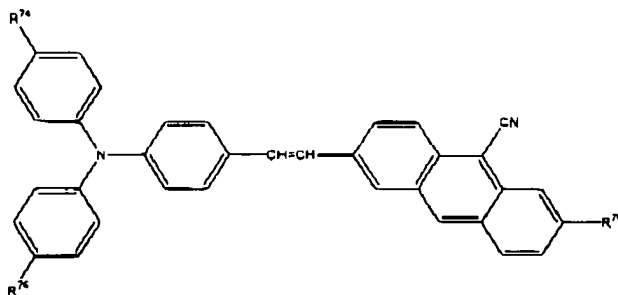
(wherein, in the general formula (21) above, R^{70} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and ~~or~~ an aryl group which may have a substituent; and R^{71} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (22) has the formula:



(wherein, in the general formula (22) above, R^{72} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, ~~or~~ and ~~or~~ an aryl group which may have a substituent; and R^{73} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (23) has the formula:

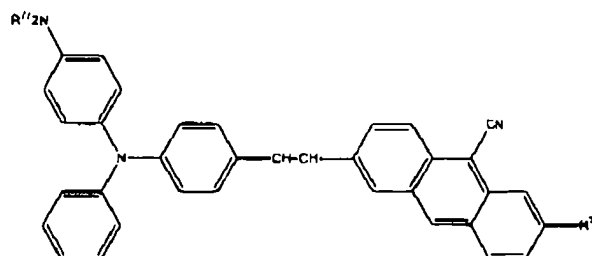


(wherein, in the general formula (23) above, R^{74} and R^{75} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, ~~or~~ and an aryl group which may have a substituent; and R^{76} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (24) has the formula:

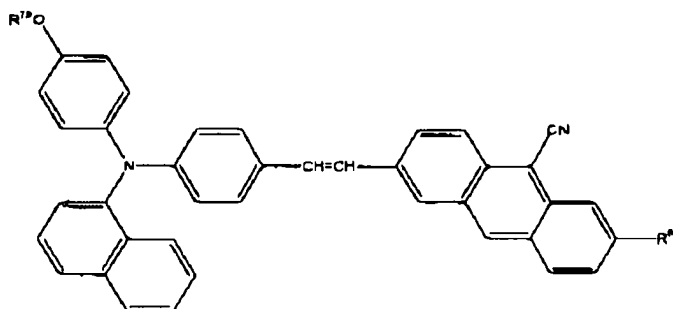
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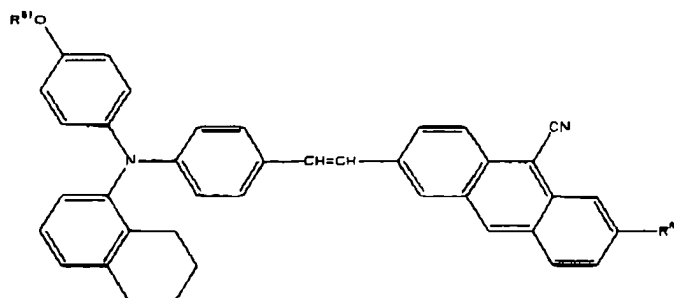
(wherein, in the general formula (24) above, R^{77} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{78} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (25) has the formula:



(wherein, in the general formula (25) above, R^{79} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{80} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (26) has the formula:



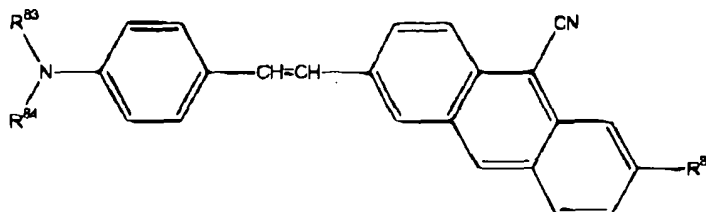
(wherein, in the general formula (26) above, R^{81} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl

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group which may have a substituent; and R^{82} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

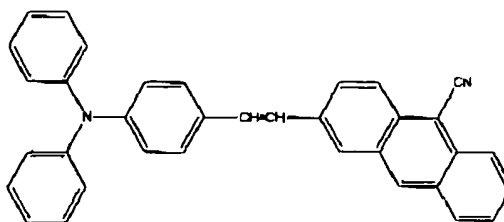
wherein Ggeneral formula (27) has the formula:



~~(wherein, in the general formula (27) above, R^{83} and R^{84} each represent~~ are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent; and R^{85} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

24. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in according to Claim 21; wherein said process gives an~~ aminostyrylanthracene compound represented by ~~the following structural formula (28) 1, (28) 2, (28) 3, (28) 4, (28) 5, (28) 6, (28) 7, (28) 8, (28) 9, (28) 10, (28) 11, or (28) 12.~~ a formula selected from the group consisting of structural formula 28-1, structural formula 28-2, structural formula 28-3, structural formula 28-4, structural formula 28-5, structural formula 28-6, structural formula 28-7, structural formula 28-8, structural formula 28-9, structural formula 28-10, structural formula 28-11, and structural formula 28-12;

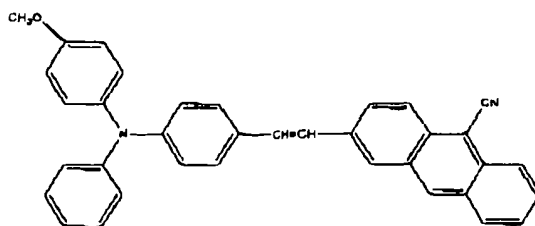
wherein Sstructural formula (28)-1 has the formula:



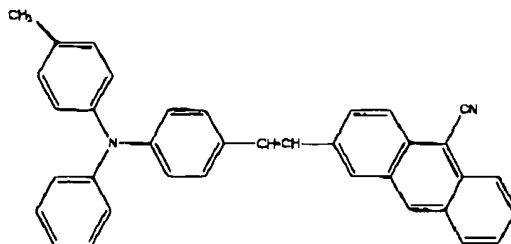
wherein Sstructural formula (28)-2 has the formula:

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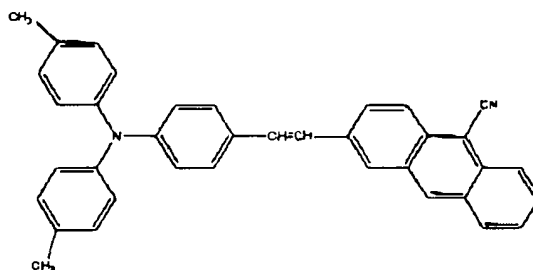
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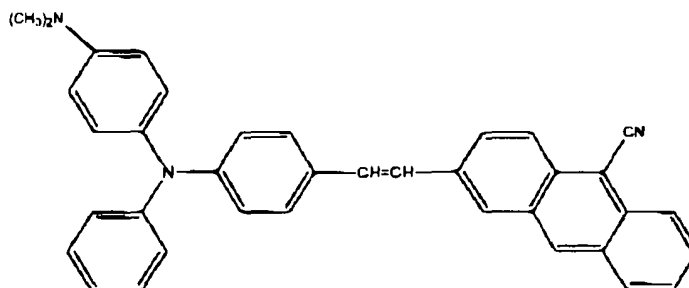
wherein Structural formula (28)-3 has the formula:



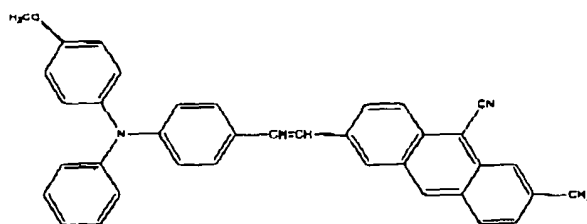
wherein Structural formula (28)-4 has the formula:



wherein Structural formula (28)-5 has the formula:



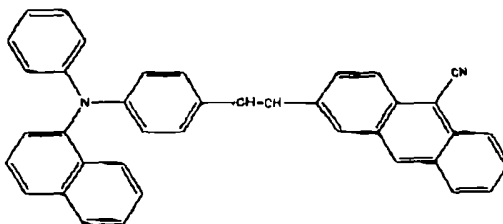
wherein Structural formula (28)-6 has the formula:



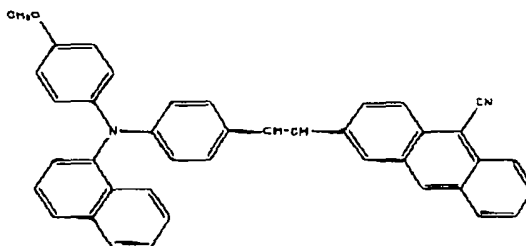
wherein Structural formula (28)-7 has the formula:

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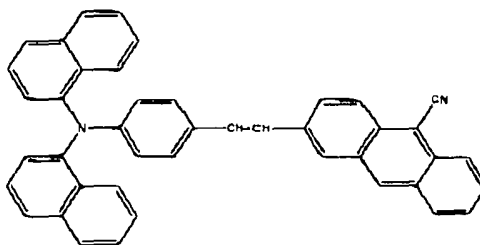
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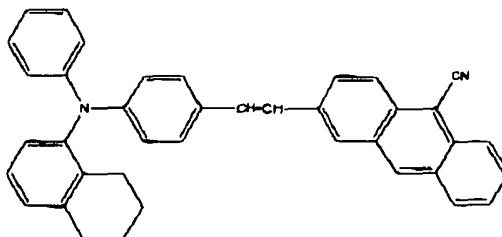
wherein Sstructural formula (28)-8 has the formula:



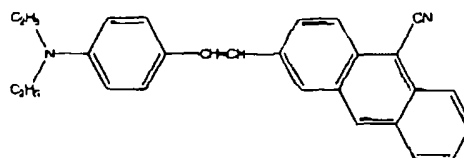
wherein Sstructural formula (28)-9 has the formula:



wherein Sstructural formula (28)-10 has the formula:



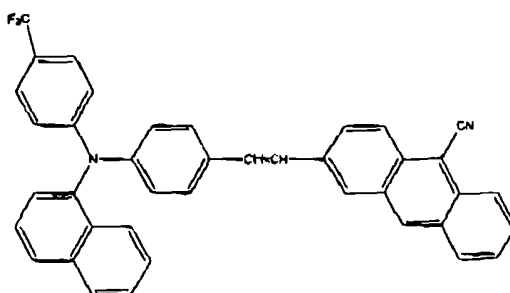
wherein Sstructural formula (28)-11 has the formula: and



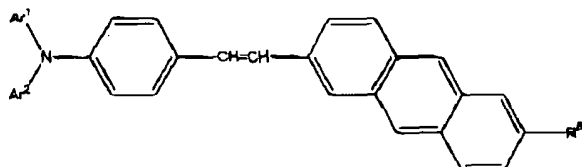
wherein Sstructural formula (28)-12 has the formula:

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25. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 14; wherein an aminostyrylanthracene compound is represented by the following general formula (29); having the formula:



~~(wherein, in the general formula (29) above, Ar¹ and Ar² are identical or different aryl groups which may have a substituent and, if they have a substituent, they represent a group selected from aryl groups represented by the following general formulas (6), (7), (8), (9), (10), and (11), wherein said substituent is selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10 and general formula 11;~~

wherein General formula (6) has the formula:



wherein General formula (7) has the formula:



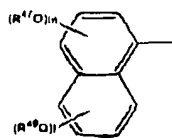
wherein General formula (8) has the formula:



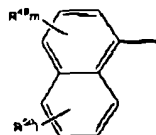
wherein General formula (9) has the formula:

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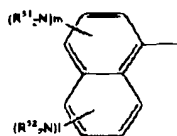
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wherein ~~G~~ general formula (10) has the formula:

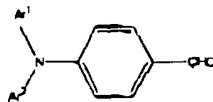


wherein ~~G~~ general formula (11) has the formula:



(wherein, in the general formulas (6), (7), (8), (9), (10), and (11) above, R^{44} , R^{45} , and R^{46} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon groups having one or more carbons, and or a fluoroalkyl group; R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are identical or different groups, each representing separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, or and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; and l is an integer of 0 to 3; and R^{86} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group, and or an aryl group which may have a substituent.)

wherein said compound is obtained by condensing 4-(N,N-diarylamino)benzaldehyde represented by the following having a general formula (38); with a phosphonic ester represented by the following general formula (41) or a phosphonium salt represented by the following general formula (42). General formula (38):



wherein Ar^1 and Ar^2 are identical or different aryl groups which may have a substituent selected from the group consisting of general formula 6, general formula 7, general formula 8, general formula 9, general formula 10, and general formula 11;

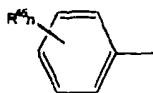
wherein general formula 6 has the formula:



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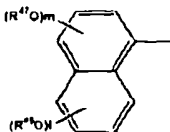
wherein general formula 7 has the formula:



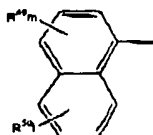
wherein general formula 8 has the formula:



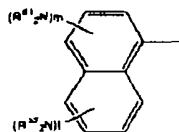
wherein general formula 9 has the formula:



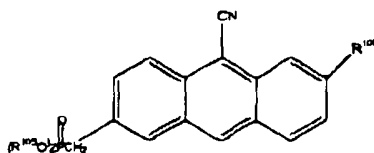
wherein general formula 10 has the formula:



wherein general formula 11 has the formula:



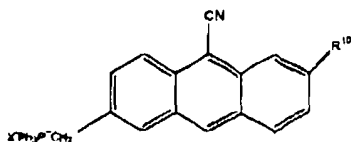
wherein R^{44} , R^{45} , and R^{46} each represent a saturated or unsaturated hydrocarbon group having one or more carbons; R^{47} , R^{48} , R^{49} , R^{50} , R^{51} , and R^{52} are identical or different groups separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having one or more carbons, and a fluoroalkyl group; n is an integer of 0 to 5; m is an integer of 0 to 3; l is an integer of 0 to 3;
with a phosphonic ester having a general formula 39:



or, in the alternative, a phosphonium salt having a general formula 40:

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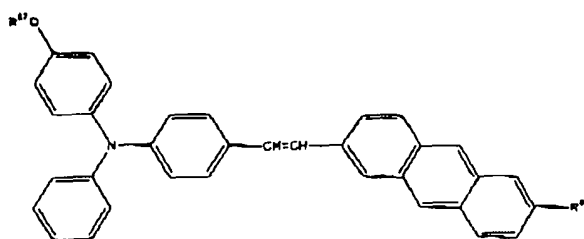
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(wherein, in the general formulas (38), (41), and (42) above, Ar^1 , Ar^2 , R^{105} , and X are defined as above; and R^{108} is selected from the group consisting of R^5 , R^{16} , R^{25} , and R^{42} ; and X is a halogen atom.

26. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in according to~~ Claim 25; wherein R^{44} , R^{45} , R^{46} , R^{47} , R^{48} , R^{49} , R^{50} , R^{51} and R^{52} are groups having 1 to 6 carbons.

27. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in according to~~ Claim 25; wherein said process gives an aminostyrylanthracene compound represented by ~~the following general formula (30), (31), (32), (33), (34), (35), or (36): a formula selected from the group consisting of general formula 30, general formula 31, general formula 32, general formula 33, general formula 34, general formula 35, and general formula 36;~~
wherein General formula (30) has the formula:

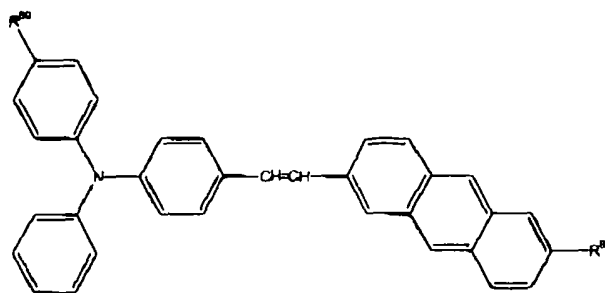


(wherein, in the general formula (30) above, R^{87} ~~represents~~ is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{88} ~~represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or and~~ an aryl group which may have a substituent-);

wherein General formula (31) has the formula:

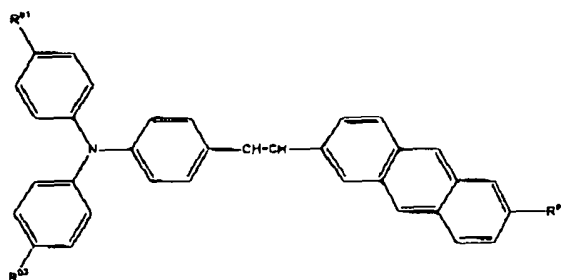
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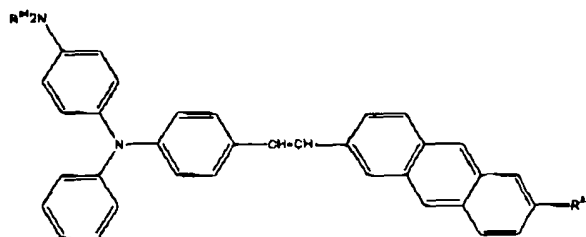
(wherein, in the general formula (31) above, R^{90} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, and or an aryl group which may have a substituent; and R^{91} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (32) has the formula:



(wherein, in the general formula (32) above, R^{92} and R^{93} each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, a trifluoromethyl group, or and an aryl group which may have a substituent; and R^{94} represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);

wherein General formula (33) has the formula:



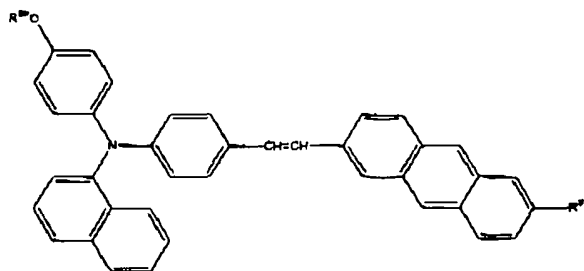
(wherein, in the general formula (33) above, R^{95} represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent; and R^{96} represents is selected from the group consisting of

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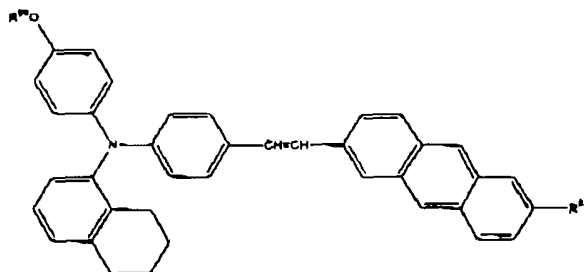
a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-);

wherein General formula (34) has the formula:



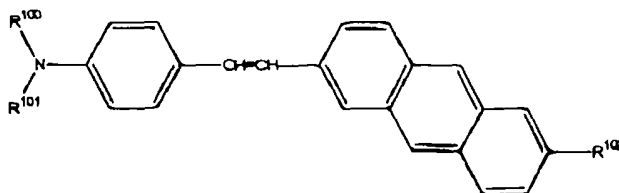
~~(wherein, in the general formula (34) above, R⁹⁶ represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent-; and R⁹⁷ represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);~~

wherein General formula (35) has the formula:



~~(wherein, in the general formula (35) above, R⁹⁸ represents is selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, and or an aryl group which may have a substituent-; and R⁹⁹ represents is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, or and an aryl group which may have a substituent-);~~

wherein General formula (36) has the formula:



~~(wherein, in the general formula (36) above, R¹⁰⁰ and R¹⁰¹ each represent are separately selected from the group consisting of a saturated or unsaturated hydrocarbon group having 1 to 6~~

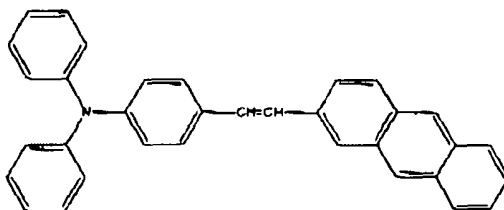
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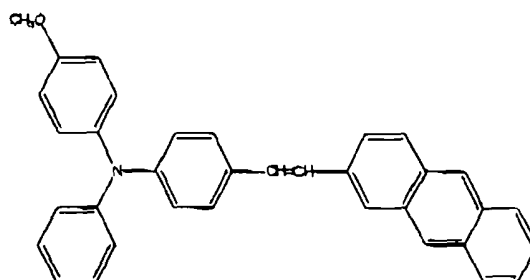
carbons, ~~or~~ and an aryl group which may have a substituent; ~~and R¹⁰² represents~~ is selected from the group consisting of a hydrogen atom, a saturated or unsaturated hydrocarbon group having 1 to 6 carbons, ~~or~~ and an aryl group which may have a substituent-;

28. (currently amended) A process for producing an aminostyrylanthracene compound ~~as defined in~~ according to Claim 25; wherein said process gives an aminostyrylanthracene compound represented by ~~the following structural formula (37)-1, (37)-2, (37)-3, (37)-4, (37)-5, (37)-6, (37)-7, (37)-8, (37)-9, (37)-10, (37)-11, or (37)-12-~~ a formula selected from the group consisting of structural formula 37-1, structural formula 37-2, structural formula 37-3, structural formula 37-4, structural formula 37-5, structural formula 37-6, structural formula 37-7, structural formula 37-8, structural formula 37-9, structural formula 37-10, structural formula 37-11, and structural formula 37-12;

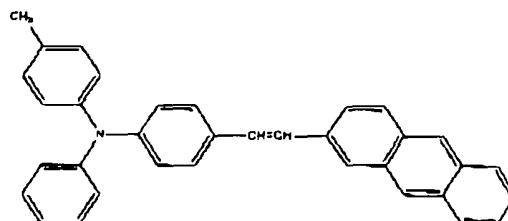
wherein ~~S~~ structural formula (37)-1 has the formula:



wherein ~~S~~ structural formula (37)-2 has the formula:



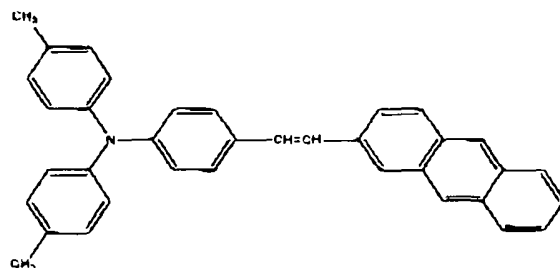
wherein ~~S~~ structural formula (37)-3 has the formula:



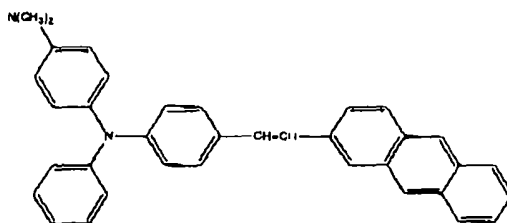
wherein ~~S~~ structural formula (37)-4 has the formula:

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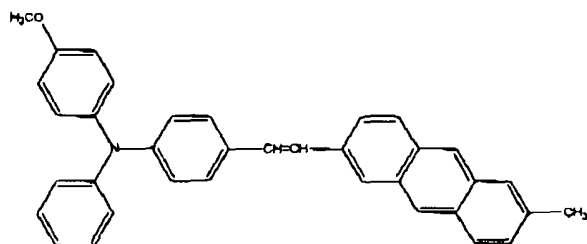
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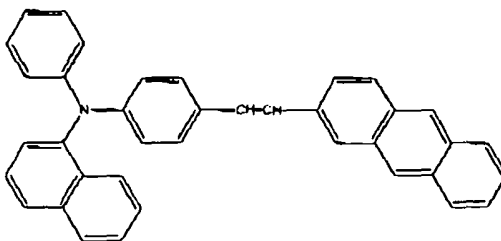
wherein structural formula (37)-5 has the formula:



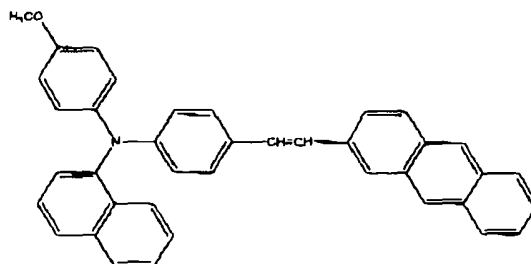
wherein structural formula (37)-6 has the formula:



wherein structural formula (37)-7 has the formula:



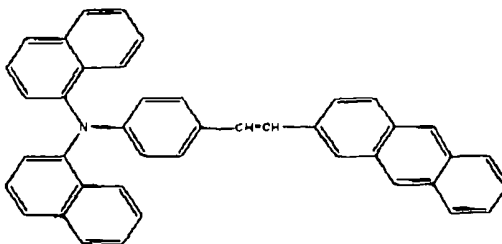
wherein structural formula (37)-8 has the formula:



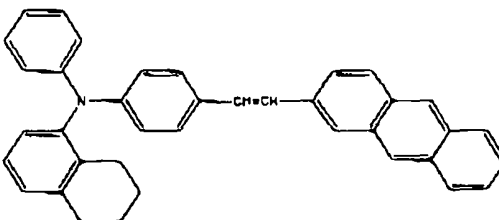
wherein structural formula (37)-9 has the formula:

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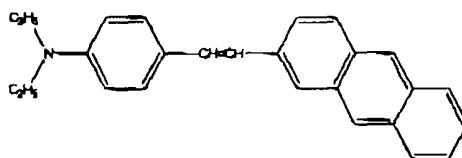
Application No. 09/980,323
Reply to 06/25/2003 Office Action



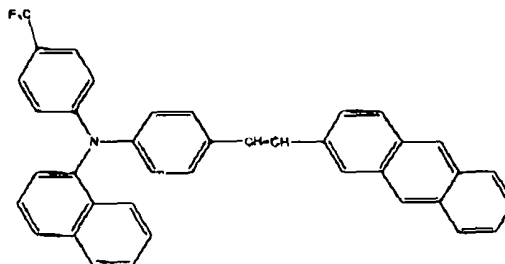
wherein structural formula (37)-10 has the formula:



wherein structural formula (37)-11 has the formula: and



wherein structural formula (37)-12 has the formula:



Claims 29-40. (Canceled)